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Te Whakaterere Waka Hourua

He tuhinga roa
kua tukuna hei whakaoti
i ngā whakaritenga

o

Te Tohu Paerua a Te Tari Māori

i te


Whare Wānanga o Waikato

nā

Te Taka Adrian Gregory Keegan


Te Whare Wānanga o Waikato

1996



**Ko tihi - E Mauri ora !
Uea - waerea te one tapu
Kahura rā tangata-ā-uta
Me tūraki atu ki tangata-ā-tai
Kahura rā tangata-ā-tai
Me tūraki atu ki tangata-ā-uta
Pērā hoki rā
Te Korepe nui
Te Korepe roa
Te Waahi awa
Te totoe awa
Whakamoea tama i te ara
Whakamou tama i te ara

Ko Tū, ko Rongo
Kau raka Tama e uhia
Tukua atu Tama kia i waho i te tawhangawhanga
He putanga Ariki
Nō Rongo
Mai ea, Mai ea
Mai te tupua
Mai ea, Mai ea
Mai te tawhito
I hara mai koe i a whaka Hotunuku
I a whaka Hoturangi
Ko tō manawa, Ki taku manawa
E Tāne ka irirhia
Whano, whano
Hara mai te toki
Haumi e, Hui e, Taiki e!**





Ariā

Ko te whakaaturanga i te mahi whakaterere waka hourua te kaupapa o tēnei tuhinga roa.¹

I roto i te ruangahurutanga o ngā tau kua pahure ake nei he waka hourua kua hangaia i runga i ngā taurira tawhito. Ko ērā ētehi kaumoana ka akongia ngā mahi whakaterere waka kia aratakina ai aua waka i runga anō i ngā tohutohu a te taiao anake. I pēnei ai hei whakaora mai anō ngā mātauranga Māori e pā ana ki te whakawhiti moana nui mā runga waka hourua.


Arā rā tētehi rerenga o te waka hourua nō Aotearoa, ko Te Aurere, i te tau 1995. I wehe te waka whakahirahira nei i Hawai'i, i te 1 o Pipiri, ā, i ū rawa atu ki Rarotonga i te 30 o Pipiri. Ko te kaituhi nei tētehi o ngā kaumoana o runga. Nō reira, he wāhanga nui i roto i te tuhinga roa nei, hei tiro i te mahi whakaterere waka hourua i mahingia i taua rerenga moana a Te Aurere.

Hei whakaatu i te mahi whakaterere waka hourua ka whakawehengia kia rima ngā kaupapa nui. He whakatakoto huarahi kia tere ai te waka o te kaupānui i te māhoranui o te tuhinga roa nei.

Tuatahi. He wehe i te tauranga, he peka atu ki te whanga o ngā pukapuka. He utanga ki reira e whakamārama ana i ngā whakapae, i ngā tautohetohe, i ngā whakahē, i ngā whakaae, kua tuhia, kua tāngia ki te pukapuka, kua whakaputaina ki te ao whānui.

Tuarua. He whai i ngā tapuwae o ngā waka hourua kua whakawhiti i ngā moana nui i te ao hou nei. Kua whakarārangitia noa ngā rerenga nei, kia kite ai te kaupānui i rere mā whea ngā waka hourua, i ēnei tau ruangahuru tata nei.

¹ I roto i tēnei tuhinga ko te tikanga o 'whakaterere waka' ko te aro, ko te ārahi me te arataki o te waka. Ehara kē i te kōrero mō te hanga waka, mō te whakapakari waka, mō te mahi rānei kia rere ai te waka, engari ia ko te tirohanga, 'i pēwhea te kaihautu i mōhio ai kei whea te waka'.



Tuatoru. Ka whakaritea te waka o te kaipānui mō te whakawhitinga nui. Ka wānangangia ētehi tikanga a te mahi whakaterere waka hourua, i te ao hou nei. He ara kia māmā mai ai ngā kōrero i te wāhanga e whai mai ana.

Tuawhā. Ka rere ngātahi mai i te taha o Te Aurere, i āna whakawhitinga mai i Hawai'i tae rawa atu ai ki tōna ūnga, ki Rarotonga. He tātaritanga i taua rerenga i takahia ai i te tau 1995. Ka kitea i pēwhea te mahi whakaterere waka.

Tuarima. Ka hoki kōmuri mai ki te tōpū o ngā whakaaro, ki te whakarāpopototanga o ngā kōrero, ki te whītiki o ngā kī, e whakamārama ana i ngā whakaponotanga i puta nā te tirohanga ki te mahi whakaterere waka hourua.



He Kupu Whakataki

I tō te kākano aroha mō te kaupapa waka hourua nei, i te tau 1990, i ngā akoranga a Hoturoa Barclay-Kerr, i tōna manawa wera, i tōna wehiwehi, i te pīataata mai a ōna whatu i a ia e kōrero ana mō tāna terenga i runga i a Hōkūle'a. Ka wana mai taku whāinga i ngā mahi a Te Aurere i te tau 1992. Ka tupu i te raumati 1994, i te rironga tūranga kaumoana i runga i a Te Aurere, mai i Kāwhia, pōtere atu ai ki Ngāmotu. Ka whakapakaritia e ngā wānanga tekau mā whā i tū ai i te awa o Te Aurere i ngā tau 1994-1995. Ka whakapūāwai he aroha rahi tonu i tāku whakawhitinga mai i Hawai'i, ū rawa atu ai ki Rarotonga, i runga i a Te Aurere, i te marama o Pipiri, 1995.

Ki tāku nei titiro, ki te wehe atu te tangata i ngā āhurutanga o tōna ake nei ao, kātahi ia ka noho wā roa i ngā ringaringa o ngā atua i runga i te rangi me ngā atua i runga i te moana, ka rerekē ōna mahara, ka rerekē āna tirohanga, ka rerekē tōna wairua. Koia nei ngā āhuratanga ka pā mai ki a au i ngā rā 30 e rewa ana mātou i te Moananui-ā-Kiwa. Nō reira, ko te tirohanga a te kaituhi nei, he tirohanga nā tētehi kua whakamātautaukia i te pae o waho.

Nā konā pea, kua nui ōku nei whakapono ki ngā atua Māori. Ki te mea atu au, 'ko ngā tamariki a Tāwhiri-mātea e pupuhi mai ana', kāore au e kōrero atu ana mō te hau noa iho, engari kei te kōrero kē au mō ngā tamariki a Tāwhiri-mātea i runga tonu i āku nei kitenga me tōku nei whakapono ki aua atua. Anō rā ko te kōrero mō te Tuahiwinui-ā-Hinemoana, kāore au i te kōrero atu mō tētehi takiwā noa iho o te moana. Ki a au, ehara i te takiwā noa iho, kei te moana nui a Hinemoana e takoto ana, e whātoro atu ana. He wāhi tō ōna ringaringa, he wāhi tō ōna waewae, he wāhi anō tō tōna tuahiwi. Nā ēnei wāhanga o ōna tinana ka whakahaere i ngā āhuratanga kei ngā takiwā o te Moananui-ā-Kiwa.

He rahi tonu ngā mōhiotanga tawhito o ngā mātua tūpuna e pā ana ki te moana kua ngaro. Nā te rahi o te whenua i te Ika-ā-Maui, ka ngaro haere ngā take hei hoki atu ki Hawaiki-roa, ki Hawaiki-nui, ki Hawaiki-pāmamao. Ka ruarua haere ngā whakawhitinga nui i te moana, ā, tae rawa ki te wā ka noho tūturu te iwi Māori ki ngā moutere nui nei. Ka whakawhiti haere ki tua o te ārai ngā tohunga e pūpuri ana i ngā mātauranga whakatere waka hourua. Ka waiho ngā morehu kupu ki ngā karakia me ngā waiata tawhito. He uaua te kitea, te mōhiotia, ko tēwhea whetū tērā e kōrerotia ana, ko tēwhea wāhanga o Tāwhiri-mātea tērā e āwhina ana, ko tēwhea wāhanga o Hine-moana tērā e taetae atu ana.

Ko te mea e whakapono ana au, i taea ai e ngā tūpuna Māori te whakawhāiti i te Moananui-ā-Kiwa, nō tō rātou mōhiotanga hōhonu ki te taiao me ngā atua o runga me ngā atua o raro. I aratakina mai ngā kaiwhakatere e aua atua kia tae rawa atu ki te ūnga e hiahiatia ana. Ahakoa kua ngaro noa ngā tohunga kaumoana, kei reira tonu ngā atua, ngā kaitiaki, ngā kaitohutohu, ngā kaiārahi.

Ko ngā rerenga o ngā waka hourua i ēnei rā he rangahau mātauranga e pā ana ki te whakawhiti moana nui me te whakatere waka hourua. Ko te tūmanako kia haumanu anō te mōhiotanga tawhito ki waenganui i ngā iwi o ngā moutere o te Moananui-ā-Kiwa. He uaua te kī, e ōrite tonu ana te mahi whakatere waka a ngā kaiwhakatere waka i ēnei rā ki te mahi whakatere waka a ngā kaiwhakatere waka i neherā. Engari ia, ko wai hoki ka whakahē i te whakaaro, e ōrite tonu ana ngā tirohanga. Me kī, kei reira tonu aua atua i runga e arataki mai ana, kei reira tonu aua atua i raro e kawē tonu mai ana.

He uaua rawa te whakatakoto kupu i te tuhinga nei, nā te mea, ehara tēnei i te tuhinga roa noa iho, engari he tuhinga i raro i ngā ture me ngā herenga a te Tohu Paerua i te Whare Wānanga o Waikato. Nā kōnā, ka aukatingia te tuhi i ōku ake nei whakaaro me ōku ake nei whakapono. Me tuhi kē ngā kupu ka taea te tautoko (ki tā te whakapono o tauwi), ā, ka herengia e te wā, ka herengia hoki e te rahi o ngā kupu.

Nō reira, he maha ngā mahara, he tini ngā mahi tinihanga, he tiketike ngā whakakitenga kua mahue mai nā. He korewhai wāhanga i roto i tēnei tuhinga roa. He wā anō, he tuhinga anō, hei whakaputa i aua kōrero.

Ko ōku wāwata mō te tuhinga roa nei, kia whakahauorangia te mātauranga whakaterere waka hourua, kia whakahau i ngā kaumoana hou ki te whakaputa ki te moana nui, kia whakaohohongia anō ngā tirohanga me ngā rapu āwhina i te Whānau Mārama, i a Tāwhiri-mātea me ōna wāhanga, i a Tangaroa hoki me ōna wāhanga. He pūtake āwhina, he puna aroha i reira, e kore rawa e mimiti.

Kia ora rā.



He Tuku Aroha


Me he waka hourua au, ko ngā takere kua tō i te kura waka o Papatuanuku, kua pihi ake i te tomairangi o Ranginui, ā, kua pakeke nā ngā tiakitanga o ā rāua tamariki katoa. Ka taka mai te taura i Rangiātea. He waka hourua kua tāraia e ōku nei tūpuna mātua. Ko ngā rā he taonga tuku iho i te taha o tōku matua, i te taha Pākehā. Ko ngā rākau katoa, he mea tuku iho i te taha o tōku whaea, otirā, ko tētehi tokotū i whakatupu i Waikato-Maniapoto, ko tētehi tokotū i whakatipu i Ngāti Porou.

Ka kī ngā rā i te hau ka whakapā mai, nā koutou rā kua whakawhetūrangitia. Ko koe tonu tēnā Nan, kōrua ko tō tama tuku ingoa mai, koutou katoa. E te hāpai ō, e Hilda, noho mai nā i te taha o tērā reo i kumea mātou ki Rarotonga, tērā reo aroha a Tereapi, ko kōrua tonu kei runga i ngā ngaru. E kī ana te kōrero, 'he wini raro, he homai aroha'. Moe mai, moe mai, moe mai. Kāti.

Ko te hoe matua o te waka hourua nei, he mea urungia e ōku nei whaea, he wā ko tō ringa tēnā e aku ake nei, he wā anō ko tōu e Auntie Colleen, e Haupai, e Terehia, ā, he wā nunui kua kapinga e tōu, e Te Rita. Ko ngā hoe piripiri he mea whakamaua e ōku nei tuākana, e ōku nei tēina, e ōku nei tuāhine.

Ko ngā taura whakaaraa, ngā taura kutikuti, he mea kua hangaia i te Whare Wānanga o Waikato, i raro i te manaaki me te tiāki o ōku nei rangatira, o ōku nei whaea, o ngā tuākana me ngā tuāhine.

Ko tētehi utanga nui e kawē ana i te waka, he mea tuku iho, e te 'chief', e Hekenukumai, he taonga whakahirahira. Anō hoki, he wāhanga nui tāu, e taku rangatira, e Hotu. He rironga nui tonu kua tukua e koe, e Jacko. Ko ngā taputapu he mea homai e ōku nei hoa kaumoana katoa, nā tō koutou tini e kore e taea e au te whakaingoa, ahakoa taku hiahia.



Ko ngā kaumoana o te waka hourua nei, ko ngā kaipānui i ngā whārangi, ko ngā kaiwhakarongo ki ngā kupu. He tūtakitaki-ā-wairua. Ko te tūmanako, he hua ka tuku ki ngā puna o taku moko, otirā, ki ngā puna o ngā moko whānui. Kia kua ngā kaumoana nei e tiro ana ki ngā pūpeka o te waka nei, engari kia rapungia ngā taonga hei kawenga mā koutou.

Nō reira, e te waka hourua, tēnei au, tēnei au, e mihi atu ana, e aroha atu ana, e tangi atu ana, e tangi atu ana. Tēnā anō rā, koutou katoa.



Rārangi Ūpoko

Taitara.....	i
Waerea.....	ii
Ariā	iii
Kupu Whakataki.....	v
Tuku Aroha.....	viii
Rārangi Ūpoko	x
Rārangi Pikitia	xii
Rārangi Whakaahua.....	xii
Ngā Rārangi	xiv
Ūpoko I: He Kōrero Kē Te Pukapuka.....	1
He Whakamārama	1
Ngā Whakaaro Tuatahi O Tauwi.....	2
Ngā Whiunga Kupu A Sharp.	3
Ngā Mahi Rangahau.....	5
Ngā Kōrero Tuku Iho A Te Iwi Māori	6
Te Whakatau O Nāianeī.....	7
Ūpoko II: Whakaterere Ana Poupaka.....	8
He Whakamārama	8
Hōkūle'a	9
1976 Hawai'i - Tahiti - Hawai'i.....	10

1978 Ka Tahuri A Hōkūle'a.....	12
1980 Hawai'i - Tahiti - Hawai'i.....	12
1985-1987 Te Moananui-ā-Kiwa.....	14
Ka Haere ki Aotearoa.....	14
Ka Hoki ki Hawai'i.....	14
1992 Hawai'i - Tahiti - Kuki Airani - Tahiti - Hawai'i.....	16
Hawaiki-nui.....	17
Te Aurere.....	18
1992 Aotearoa - Rarotonga-Aotearoa.....	19
1993-1994 Taiāwhio i te Ika-ā-Maui.....	19
Ngā Rerenga I Te Tau 1995.....	20
Whakarāpopotonga.....	23
Ūpoko III: He Waewae Kai Kapua.....	24
He Whakamārama.....	24
Te Whakarite Huarahi.....	25
Te Whakawehewehe I Ngā Pae.....	25
Te Whakakake ki Te Hau.....	28
Ngā Whakawhitinga Whakaaro.....	30
Ngā Whakaritenga Waka.....	30
He Mahi Tūturu.....	30
Te Arataki I Te Waka.....	34
Te Tere O Te Waka.....	34
Te Aronga O Te Waka.....	35
Te Ārahi o Te Whānau Mārama.....	35
Tamanui-te-Rā.....	36
Te Marama.....	37
Ngā Whetū.....	39
Ngā Whetū Ao.....	42
Te Ārahi o Tangaroa.....	43
Te Ārahi o Tāwhiri-mātea.....	43
Te Rapu Whenua.....	44

He Whakarāpopoto	47
Ūpoko IV: He Pukepuke Moana	48
He Whakamārama	48
Te Whakarite Huarahi	49
Te Ara Moana i Whakarite	50
Ngā Māharahara	54
Ngā Kaumoana	55
Te Poti Tautoko	56
Ngā Herenga Me Ngā Taputapu Pākehā	57
Te Arataki I Te Waka	60
Ngā Rerenga	60
Wāhanga I 1-7 Pipiri: 21° 19'N - 07° 02'N	61
Wāhanga II 8-16 Pipiri: 07° 02'N - 01°08' S	63
Wāhanga IIIa 16-24 Pipiri: 01°08' S - 10°02' S	65
Wāhanga IIIb 24-30 Pipiri: 10°02' S -21°14' S	68
Ngā Tohutohu O Ngā Atua	70
Te Ārahi a Te Whānau Mārama	70
Te Ārahi a Tangaroa	73
Ngā Tamariki a Tangaroa	75
Te Ārahi a Tāwhiri-mātea	76
Te Mahi Tatau O Te Kaiwhakaterere Waka	77
He Kupu Takataka	77
Ngā Tatau Nui E Rua	78
Ngā Nama Tauira E Whitu	78
Te Aronga Mā Te Whare O Ngā Reo	81
E Rua Noti Te Tere O Te Waka	82
E Ono Hāora Te Roa O Te Rerenga	83
Ētehi Tauira Nō Te Rerenga	84
Te Pō I Te 4 o Pipiri	84
Te Rā 26 o Pipiri	86
Ngā Rerenga a Te Waka	88
Te Rapu Whenua	90
He Tirohanga Whakamuri	91

Ngā Āwhina a te Mīhini Pākehā	93
He Whakarāpopoto	96
Ūpoko V Te Whītiki I Te Kī.....	97
Ngā Āpitianga.....	101
He Kupu Waka Hourua	101
Ngā Nama O Ngā Pae.....	102
70 Whetū Nui.....	104
Ētehi Rerenga A Te Whānau Mārama.....	108
Ngā Wāhi Rere.....	121
Ngā Puna Kōrero.....	125
Ngā Kaikōrero.....	125
Ngā Pūmanawa Rorohiko	125
Ngā Rīpene Whakaata.....	126
Ngā Pukapuka Tautoko	126

Te Rārangi Pikitia

Pikitia

1: Hōkūle'a II By Herb Kawainui Kane.....	9
2: Ētehi waka i Rarotonga.....	16
3: Te Aurere.....	20
4: He āwhā i te moana	67
5: “The Arrival Of New Zealand Maoris”	99
6: Ngā kaumoana a Te Aurere, Pipiri 30, 1995.....	99

Te Rārangi Whakaahua

Whakaahua

1:	Tahiti ki Hawai'i 1976	11
2 :	Hawai'i ki Tahiti 1976	11
3:	Ngā Rerenga a Hōkūle'a i te tau 1980	13
4:	Hawai'i ki Aotearoa 1985.....	15
5:	Aotearoa ki Hawai'i 1986-1987	15
6:	Ngā Rerenga a Te Aurere i te tau 1995	23
7:	Ngā Pae nō Te Ao Pākehā	26
8:	Ngā Pae nō te Ao Māori.....	26
9:	Te Kāpehu nā Nainoa.....	27
10:	Te Kāpehu nā Te Aurere	27
11:	Ngā Hā Hei Nuku Te Waka Whakamua	29
12:	Ngā Hau Kore-Nuku	29
13:	Tamanui i te Raumati	36
14:	Tamanui i te Ngahuru/Kōhanga	36
15:	Tamanui i te Takurua.....	36
16:	Te Marama i te Pō 1	38
17:	Te Marama i te Pō Pō 6-7	38
18:	Te Marama i te Pō Pō 13-14.....	38
19:	Rerenga Whetū i te Raumati	40
20:	Rerenga Whetū i te Takurua	40
21:	Te Rerenga a Māhutonga	41
22:	Ētehi Manu nō te Moana	45
23:	Te Ara Moana I Whakaritea.....	51
24:	Wāhanga 1 Te Tīmatanga.....	61
25:	Wāhanga II Te Tuahiwinui-ā-Hinemoana.....	63
26:	Wāhanga IIIa Te Nohopuku Tuarua.....	65
27:	Wāhanga IIIb Te Whakaotinga.....	68
28:	Ka aro te waka ki 'Ngā Reo'.....	71
29:	Ka Aro Te Waka ki 'Haka'.....	71
30:	Ngā Amotai i te Aronga ki 'Ngā Reo'.....	74
31:	Ngā Amotai i te Aronga ki 'Haka'.....	74
32:	Ngā Tawhiti, inā mā te Tonga te Ara Moana	79

33:	Te Ara Moana i Takahia e Te Aurere.....	92
34:	Ngā Nama Pae Nā Te Kaiwhakaterere	102
35:	Ngā Nama Pae Nā Te Pākehā.....	103

Ngā Rārangi

Rārangi

1:	Ngā Rerenga a Te Aurere, Pipiri, 1995	88
2:	He Kupu Waka Hourua	101
3:	70 Whetū Nui	104
4:	70 Wetū Nui anō	106
5:	Te Rerenga a Tamanui-te-Rā, i te tau 1995.....	108
6:	Te Rerenga a te marama, i te tau 1995	111
7:	Te Rerenga a Kōpū, i te tau 1995	113
8:	Te Rerenga a Pareārau, i te tau 1995.....	115
9:	Te Rerenga a Takurua, i te tau 1995	117
10:	Te Rerenga a Poutū-te-Rangi, i te tau 1995.....	119
11:	Tā te Gps Wāhi Rere.....	121
12:	Tā te kaiwhakaterere Wāhi Rere.....	123



Ūpoko I: He Kōrero Kē Te Pukapuka

He Whakamārama

Ka whakapuaki ngā kōrero a te tuhinga roa nei i te whakaaturanga a ngā kupu kua whakatakotoria e ētehi atu kaikōrero e pā ana ki te kaupapa whakaterere waka hourua. Ka rahi ngā kupu, ka maha ngā pukapuka. Heoi anō kāore au e hiahia ana kia whakapaungia ngā kupu a tēnei tuhinga roa ki ngā kupu a tētehi atu. Kāore hoki au e hiahia kia tuaruatia aua kupu, ki a au nei, kāore he hua. Ki te pīrangi te kaipānui ki aua kōrero kimihia ngā pukapuka i te rārangi pukapuka. Otirā, kua whakarāpopotonga pai aua kōrero i te tuhinga roa a Rāwiri Taonui (1994)¹, ā, kua whakarārangitia te tini o ngā pukapuka e Goetzfridt (1992,1995).

I te pānuitanga o ngā kōrero whakaterere waka, ka kitea, ka whakapono te ao Pākehā ki tētehi whakaaro i te tuatahi, ka takahuri ki tētehi atu whakaaro i te tuarua, kātahi ka hoki ngā whakapono ki te whakaaro tuatahi. I tēnei, te ao hurihuri nei, ka whēnei te kōrero...

He kōrero kē te pukapuka i te ata He kōrero kē te pukapuka i te ahiahi.

I roto i te Ūpoko I nei ka tirohia ngā whakapono o tauwiwi e pā ana ki te whakaterere waka hourua. Ka kitea ngā kupu tuatahi kua tāngia me te whakatipu o te whakaaro e pā ana ki aua kupu. Ka tirohia ngā whakapae o Andrew Sharp me te aranga ake a ngā kairangahau ki te whakahē i āna whakapae. Kātahi ka tirohia te whakatau o nāiane, e kī ana, i taea ai e ngā iwi o Poronīhia te whakaterere waka hei whakawhiti i te Moananui-ā-Kiwa.

¹ He taonga tēnei tuhinga roa mō tāna tirohanga pukapuka, me te nuinga a ngā kaupapa i roto.

Ngā Whakaaro Tuatahi O Taiwi

Ka tīmata ngā kōrero i ngā rerenga whakahura a Kāpene Kuki me āna tiro tiro i ngā moutere o te Moananui-ā-Kiwa. Ka miharo ia ki te māhorahora o ngā iwi Māori, nā te mea, he rahi hoki nō te Moananui-ā-Kiwa.² Ka whakahoatia tētehi tohunga nō Rai'atea, a Tupaia, ā, ka kitea e Kuki mā, e mōhio ana ia ki te rahi o ngā moutere i te Moananui-ā-Kiwa.³ Ka whakamiharo hoki ngā kaumoana Pākehā i taua wā, ki ngā mātauranga Māori e pā ana ki te Whānau Mārama, e pā ana ki ngā mahi a Tāwhiri-mātea, me te pono o tā rātou whakakite i ngā āhuatanga o te rangi e haere mai ana.⁴

I te tuatahi i te whakapono a Kuki ki te whakawhitinga mai a ngā iwi Māori i te moana nui i runga tonu i ō rātou hiahia. Engari, ka whakarerekēngia ōna whakaaro e ōna hoa. He kore whakapono nō rātou: he roro tō ngā iwi o Porinīhia; he mātauranga hōhonu tonu kei ngā iwi o Porinīhia.⁵

Ko tērā hoki tētehi kōrero nā Andia-y-Varela. Ka whakawhitiwhiti a Varela i tōna kāinga, i Peina, ki te Moananui-ā-Kiwa, i ngā tau 1772 ki te 1776. Ka tuhia e ia he kōrero e whakamārama ana i ētehi āhuatanga o te mahi whakaterere waka o ngā iwi o Porinīhia.⁶ Ki āna kitenga, ka aratakina e aua iwi ō rātou waka ki a Tamanui-te-Rā, ki ngā āhuatanga o te moana, ki ngā wāhanga o Tāwhiri-mātea, ki ngā whetū hoki i te pō.

Ka hipa te rautau 1900, kua whakapono whānui te iwi Pākehā ki ngā mahi whakaterere waka hourua. I puta i taua wā ngā kohikohinga kōrero a Fornanader (1880), rātou ko Grey (1854,1928), ko Wilson (1866), ko White (1888), ko Smith (1898,1904,1910), ko Tregear (1904), ko Andersen (1928). Ka tikina mai ngā kōrero nei i ngā pūrākau a ngā iwi Māori o Aotearoa, ā, kāore tētehi i kaha ki te whakahē i aua kōrero (i taua wā). Ko te mate o aua kōrero, kāore aua kaituhi i āta whakamārama nō wai ngā kōrero, tuatahi. Tuarua, he

² Beaglehole 1967: 279.

³ Irwin 1992: 13-14.

⁴ Banks 1962:v1:386; Parsonson 1962:41-42, 1963 14-15; Irwin 1992:14.

⁵ Irwin 1992:14; Taonui 1994:54.

⁶ Taonui 1994: 52-53; Denning 1962:112-113.

maha ngā wā ka rawekengia ngā kōrero kia hāngai tonu ai ki ngā whakapono o te kaituhi, otirā, ki ngā whakaaro me ngā tikanga a tauwi.

Ka putaputa mai ngā pukapuka a Best (1922a,1922b,1923,1925a,1925b) me tōna whakapono i taea ai e ngā tūpuna Māori te whakawhiti i te moana nui.⁷ Ka whēnā hoki a Buck (1938) me te tautoko i ngā whakaaro kua tuhia e Grey, e Smith mā.⁸ I ngā pukapuka a Best rāua ko Buck kāore tonu he kōrero e whakaatu ana i pēwhea te whakatere waka hourua, he whakapono noa iho i taea ai. Ka whēnā ngā whakapono whānui o tauwi tae rawa atu ki waenga i te rautau 1900.

Ngā Whiunga Kupu A Sharp.

I te tau 1956 ka werohia mai te pukapuka rongonui a Sharp, ko *Ancient Voyages In The Pacific*. Ka rongonui te pukapuka nei, nā te kaha whakahē i ngā tuhinga me ngā whakapono kua puta mai i mua rā, ā, ka whakaohoho te ao hurihuri i ngā whakapae a Sharp. Ko te kaupapa nui a te pukapuka a Sharp, e kī ana, ko ngā whakawhitinga katoa a ngā iwi Māori i te Moananui-ā-Kiwa, he pūrewanga pakoke noa, he rerenga waimārie noa. Ka whiua e ia he kupu e kī ana, kāore e taea e ngā iwi o Porinīhia te rongō i te ia o Tangaroa me te nukunuku a ngā hau rerekē o Tāwhiri-mātea, ā, ahakoa he mātauranga whetū nui tō rātou, ka pōuri ngā rangi i te kapua, ka ngaro katoa rātou. Ko tāna whakapono, kāore e taea e ngā tūpuna Māori te mōhio ki te tere o te waka, ki te tawhiti hoki kua rere te waka. Ki a Sharp, e 300 maera⁹ noa iho te tawhiti e taea ai e rātou te whakatere waka, ki te nui ake i taua tawhiti, ka ngaro rātou, ā, he waimārie noa iho mena ka pae ō rātou waka ki te whenua.

I tikina e Sharp te maha o ngā kupu kua whakatakotoria e ngā kaumoana Pākehā hei tautoko i tāna whakapae. Ko ētehi he tuhituhi nā Cook (1785) rātou ko Dillon (1829), ko Anderson (1826), ā, ki a Sharp, he mea tautoko katoa

⁷ Hei tauira tirohia Best 1922:35-38, 1924:33.

⁸ Buck 1938:288.

⁹ I te katoa o tēnei tuhinga ko te maera, he maera-ā-moana (Nautical maera).

1 Maera-ā-moana = 1.15 maera-ā-whenua = 1852 mita.

ā rātou kupu, i tāna i whakapae ai. Ki a ia hoki, i whakanohonoho ngā iwi Māori i ngā moutere maha o te Moananui-ā-Kiwa nā te waimārie noa iho, kāore rātou i te hiahia ki te whakawhiti ki aua moutere. Ka whakarite ia i ngā whakawhitinga moana ki te rerenga a Hana Koko...

The Polynesians were making stories and poetry, not writing history. Let the navigators sail by any star they like, as Santa gallops across the sky at midnight. No undue scepticism has risen over the fact that midnight is in a lot of places at different times, and that Santa Claus's sledge must have been very fast to have covered Christendom in one night. The fact that Maui appeared as an ancestor in many islands need not be offered as an objection to the claim of each group separately that he was their ancestor. The only mistake that can be made in such matters is to rob Santa Claus of his reindeer because they do not have wings, or to put Antares in its right place, in which case Santa Claus falls flat on his face and the navigators are lost forever. ¹⁰ ¹¹

Ka maranga ake te tokomaha o ngā kaikōrero e pā ana ki te kaupapa whakawhiti moana nui. Ko tērā a Suggs (1960) e whakahē ana i ngā whakaaro whāiti a Sharp. Ko tērā a Parsonson (1962) e kī ana kāore i tirohia te katoa o ngā kōrero e Sharp. Ko tērā a Heyen (1962) e kī ana kāore e tika ana ngā kōrero a Sharp e pā ana ki ngā āhuatanga o te moana. Ko tērā hoki a Denning (1962) e whakahē ana i ngā kupu a Sharp e pā ana ki ngā mōhiotanga o ngā iwi Māori, ki te mahi whakaterere waka me te rerenga hoki i runga i te waimārie. Ka tuhia e Gatty (1958) rātou, ko Frankel (1962), ko Makemson (1941) ngā tātai

¹⁰ Sharp 1956:85.

¹¹ I te whakawhitinga i Hawai'i ki Rarotonga, i te tau 1995, he maha ngā wā ka arataki te waka hourua a Te Aurere ki te whetū Rēhua (*Antares*). Koia tētehi whetū kaha, e tō ana i te taha Tomokanga o te rangi, te wāhi e kimi ana ngā kaiurungi i ngā tohu. Ehara i te mea i whaia e mātou taua whetū, nā tāna tōnga kētia ki tā mātou taha maui, engari he tīramarama kia whakarārangi ai te waka. Tirohia te Ūpoko IV, whārangi 450.

whetū i taea ai te mahi whakatere waka hourua.¹²

Heoi anō, ka tautoko tonutia a Sharp e Hilder (1962), rātou ko Akerblom (1968) mā. Kāore hoki a Sharp i te hiahia nohopuku, ki te mate rawa ia ka mate ururoa. I te tau 1967 ka whakaputangia e ia tētehi atu pukapuka, ko *Ancient Voyagers In Polynesia*. I kī atu ia kua rerekē ngā kōrero o te pukapuka hou. Engari i te pānuitanga, kāore i tino rerekē ngā kōrero, kāore i rerekē ngā whakaaro, kāore i rerekē te wairua.

I āna kupu whakataki i te pukapuka *Pacific Navigation And Voyaging*, (1976), ka whēnei te wero a Ben Finney; me rapu kōrero e pā ana ki te mahi-ā-ringa a ngā waka me te mahi whakatere waka.¹³ Nā, ka whēnā ngā kaituhi i roto i taua pukapuka, a Lewis rātou ko Doran, ko Horvath me Finney, ko Lauer, ko Riensenberg, ko McCoy.

Nā, kua whakaoho ake te ao whānui ki te rangahau i te kaupapa nei; āe, i taea e ngā iwi o Poronīhia te whakatere waka, kāore rānei.

Ngā Mahi Rangahau

Ka whakaarahia ngā kairangahau whānui ki te tātari te kaupapa whakatere waka hourua. Ko ētehi ka titiro ki ngā mahi-ā-ringa i roto i te Moananui-ā-Kiwa whānui, arā, a Alkire (1965) rātou ko Gladwin (1970) ko Gunn (1980). Ka āta tirohia e ētehi ngā āhuatanga o ngā waka o te moana, arā, ko Doran (1976), rātou ko Finney me Horvath (1976), ko Finney (1977), ko Lewis (1972), ko Hunt me Kelly (1984).

Ko ētehi ka takahuri ki ngā kōrero i roto i te whenua, arā, a Green (1967a,1967b, 1979,1994), rātou ko Sutton (1985,1987a,1987b), ko Kirch (1986), ko Davidson (1981,1984,1994) hoki. Ko ētehi atu ka titiro ki ngā āhuatanga o te rangi; kei a Irwin (1992) he whakarāpopototanga pai i tēnā tirohanga.

Ka whakahaeretia rorohiko e ētehi atu kairangahau kia kitea ai ngā kupu

¹² Lewis 1964:364-368.

¹³ Finney 1976:11.

tautoko i ngā whakapae. Koia te mahi nui a Levison, Ward me Webb (1973) me tētehi mahi hoki a Irwin (1992:133-173).

E pai ana ki ētehi kaikōrero (pērā ki tēnei kaituhi) ki te haere mā runga te moana, i reira rangahau kōrero ai. Koia te kaupapa i ngā tuhinga a Gladwin (1970), rātou ko Lewis (1966, 1972, 1977a, 1977b), ko Finney (1977, 1985, 1989, 1994a, 1994b), ko Siers (1977), ko Babayan (1987), ko Kyselka (1986,1987).

Ngā Kōrero Tuku Iho A Te Iwi Māori

Hāunga i ēnā pukapuka kua putaputa mai ngā kupu hītori a ngā iwi Māori o Aotearoa. Koia te pukapuka a Best (1925) mō Tuhoe, a Mitchell (1944) mō Takitimu, a Kelly (1949) me Jones/Biggs (1995) mō Tainui, a Grace (1959) mō Tūwharetoa, a Stafford (1967) mō Te Arawa, a McEwan (1986) hoki mō Rangitāne. I roto i ngā tuhinga-ā-iwi nei, karekau he tautohetohe i te kaupapa whakaterere waka hourua. Ki tō ngā iwi Māori whakapono, i whakawhiti mai ngā tūpuna Māori i runga tonu i tō rātou mōhio ki te mahi whakaterere waka hourua. Koia nei ngā whakaaro Māori nō mai rā anō, koia nei tonu ngā whakaaro Māori i ēnei rā. Engari ia, nā te roa pea o te noho a ngā iwi Māori ki Aotearoa nei, kāore e maha ā rātou kōrero e pā ana ki te mahi whakaterere waka hourua.

Ko tētehi atu āwangawanga mō ngā kupu-ā-iwi, kua kaha te whiu a te whakapae, 'kāore he mana i ngā kupu tuku iho a ngā tūpuna Māori'. Koia te wairua o ngā kupu kua tuhia e Sharp (1956,1967), rātou ko Biggs (1966), ko Orbell (1974v,1985), ko Walker (1976). Kua whakananotia hoki ngā kōrero i tuhia i ngā tau tuatahi o te 1900; e ngā pukapuka a Simmonds, *The Sources Of Sir George Grey's Ngā Mahi A Ngā Tūpuna* (1966), *The Great New Zealand Myth* (1976) me *The Words Of Matorohanga* (1994); e ngā pukapuka hoki a Sorrenson *The Whence Of The Māori* (1977) me te *Māori Origins And Migrations* (1979). I tāku nei pānuitanga, kāore a Simmonds rāua ko Sorrenson e kī atu, kua kore-hua noa ngā pukapuka i taua wā, engari ki a rāua, me tino tūpato ki te tiki kōrero i aua pukapuka.

Ki ōku nei whakaaro kei ngā kōrero tuku iho he hua tonu, he matauranga tonu e pā ana ki te mahi whakatere waka hourua. Kāore anō hoki kia āta rangahautia ngā karakia me ngā waiata tawhito. Kei reira hoki ētehi puna kōrero e kore e raweketia e te hipanga o te wā. He wā anō pea ka āta wānangangia aua taonga.

Te Whakatau O Nāiane

Kua rapungia ngā kupu rangahau hou, ā, kua whakarāpopotongia aua kōrero i roto i ngā pukapuka a Irwin (1992) rātou ko Sutton (1994), ko Taonui (1994). Me kī, he tini nō ngā whakaponotanga e kī ana i taea ngā iwi o Porinīhia te whakawhiti i te moana nui. I ēnei rā, ko te whakatau a te ao whānui, i whakawhitia e ngā tūpuna Māori te moana nui i runga tonu i tō rātou hiahia.¹⁴ Heoi anō, kei te mihi atu au ki a Andrew Sharp mō te whiunga a āna kupu. Nā taua whakapae rorirori kua ohore te ao ki te whakahoki kōrero, ā, kua whai mahi anō ngā tohunga tārai waka hourua. Engari kāore au i te whakahoki kōrero e pā ana ki tā Sharp whakapae. Kua oti kē taua mahi i ngā kairangahau o te ao hurihuri nei, kua whakawetohia rawatia aua whakaaro, ā, ki a au nei, kāore he take kia patua tonutia te kurī mehemea kua mate rawa taua kurī.

Ko tāku kē he whakaatu i pēwhea te mahi whakatere waka hourua. Kia tūtuki ai i ahau tēnei whakaaturanga, me whai waka i te tuatahi, me whai rerenga i te tuarua. Ko te kaupapa o te Ūpoko II e whai mai ana; he kōrero mō ngā waka me ngā rerenga kua hāpai ake nei i ngā tau ruangahuru kua pahure ake nei.

¹⁴ Irwin 1992:16, Sutton 1994:245-246,253-254, Taonui 1994:73-74.



Ūpoko II: Whakaterere Ana Poupaka

He Whakamārama

Ko tērā tētehi tūpuna Māori, nō neherā, he toa ki runga i te moana nui.¹⁵ Ko Poupaka tōnā ingoa. Ahakoa ngā āhuetanga kino i te rangi, ngā teitei nui o ngā ngaru ka whakaputa a Poupaka ki te moana, ā, ka hoki ora atu ai ki te whenua. E kī ana te kōrero;

Tūtūmāiao Tāwhiri-mātea Whakaterere ana Poupaka.

I roto i tēnei ngahuru tau, kua hanga waka hourua i runga i ngā taura tawhito, ā, kua whāia e ngā kaumoana ngā āhuetanga o Poupaka. Ko aua whāinga, arā, ngā whakawhitinga i te moana nui i ngā rua tekau tau nei, he kaupapa mō te Ūpoko II nei.

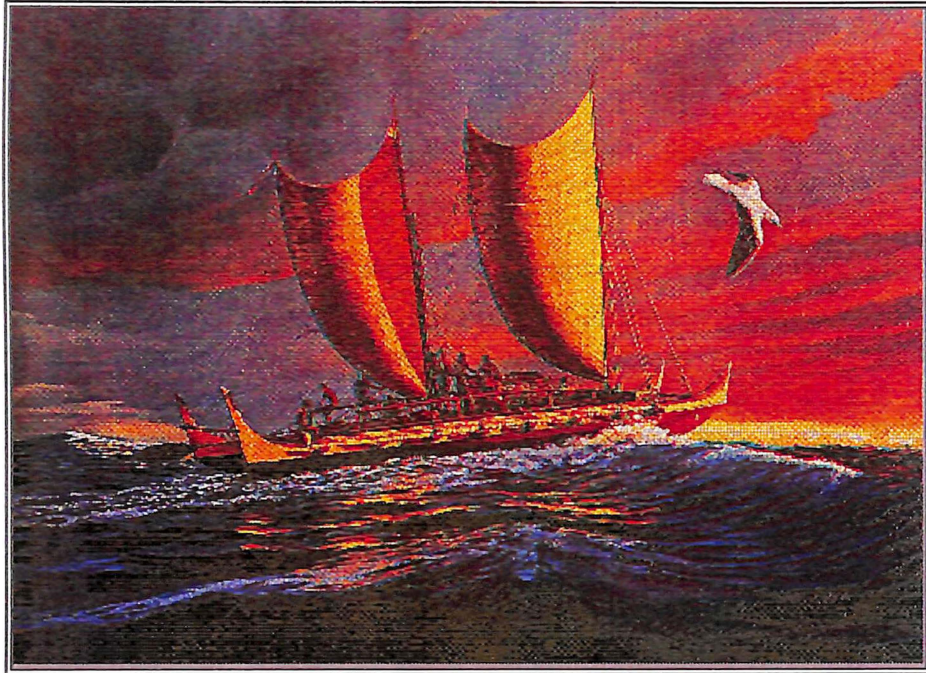
Hei tēnei ūpoko ka whakarārangitia aua rerenga me ētehi paku kōrero tautoko (he maha ngā kōrero e pā ana ki ia momo waka; te tikanga o ngā ingoa, te take i hanga whērāhia ai, te mahi whakatikatika i aua waka, ngā paku raruraru me ngā huanga nunui ka taka ki runga ki ngā iwi, engari he kōrero anō ēnā mā tētehi atu tuhinga, ka waiho te Ūpoko II nei kia wahangia ngā whakawhitinga moana anake).

Ka tīmata ngā tirohanga i te mātāmua o aua waka hourua, i a Hōkūle'a me āna rerenga i ngā tau 1976, 1978, 1980, 1985-1987, me te tau 1992 hoki. Ka whakaputangia he kupu mō te rerenga a te waka hourua a Matahi Whakataka rāua ko Francis Cowan, a Hawaiki-nui. Ka tirohia hoki ngā ara moana kua takahia e te waka rongonui, e Te Aurere. Ko te whakamutunga, he kōrero e pā ana ki ngā rerenga kua hikoia e ngā waka hourua e ono i te tau 1995.

¹⁵ Best 1925:386.

Hōkūle'a

I te tau 1973, ka whakatūngia te *Polynesian Voyaging Society* (PVS) e Ben Finney, rātou ko Tommy Holmes, ko Herb Kane.¹ Ko tā rātou kaupapa, he hanga waka hourua, hei whakawhiti i te moana nui. He huarahi tēnei hei rangahau kōrero, hei whakautu i ngā whakapae a Andrew Sharp.



Pikitia 1: Hōkūle'a II By Herb Kawainui Kane

Ka pūāwai ō rātou whakaaro i te tau 1975, i te otinga a Hōkūle'a i te marama o Poutū-te-rangi. He waka hourua, e 62 putu te roa, e waru ngā kiato, e rua ngā tokotū, e rua ngā rā². Ko te tūmanako kia hangaia te waka nei i ngā āhuetanga tawhito (he rākau 'koa', he taura kokonati), heoi anō, nā te utu, nā te roa o te wā ki te kimi i aua āhuetanga kāore i taea. Nō reira, ka hangaia te waka ki te papakaka,³ ki te rākau kahupapa,⁴ ki te tāpia⁵ hoki. Ko te

¹ ko te nuinga o ngā kōrero i tēnei Ūpoko e pā ana ki ā Hōkūle'a me ngā rerenga i te tau 1995 ka uru mai i te *Internet* i te whārangi <http://leahi.kcc.hawaii.edu/org/pvs/>.

² ko te rā, ko te wāhanga o te waka e pupuri ana i te hau, arā ko te *hera*.

³ he kupu nō te Taura Whiri I Te Reo Māori (82/T) mō te *fibreglass*.

⁴ he kupu nō te Taura Whiri I Te Reo Māori (60/T) mō te *plywood*.

⁵ he kupu nō te Taura Whiri I Te Reo Māori (68/T) mō te *glue/resin*.

whakaaro tonu, he waka hanga mai i runga i ngā ritenga tata ki ērā o te wā i whakawhiti ai ngā tūpuna Māori i te moana nui.

1976 Hawai'i - Tahiti - Hawai'i

Ka rere tuatahi a Hōkūle'a i te tau 1976, mai i Hawai'i ka tae atu ki Tahiti, ā, mai i Tahiti, ka hoki atu ki Hawai'i. E rua ngā whakaponotanga e āta tirohia ana e te PVS. Tuatahi ka taea e te waka hourua, whēnei te hanga, te whakawhiti i te moana nui. Tuarua, ka taea te whakatere waka hourua me te kore-titiro ki te kamupene, ki te GPS²¹, ki te taputapu Pākehā rānei.

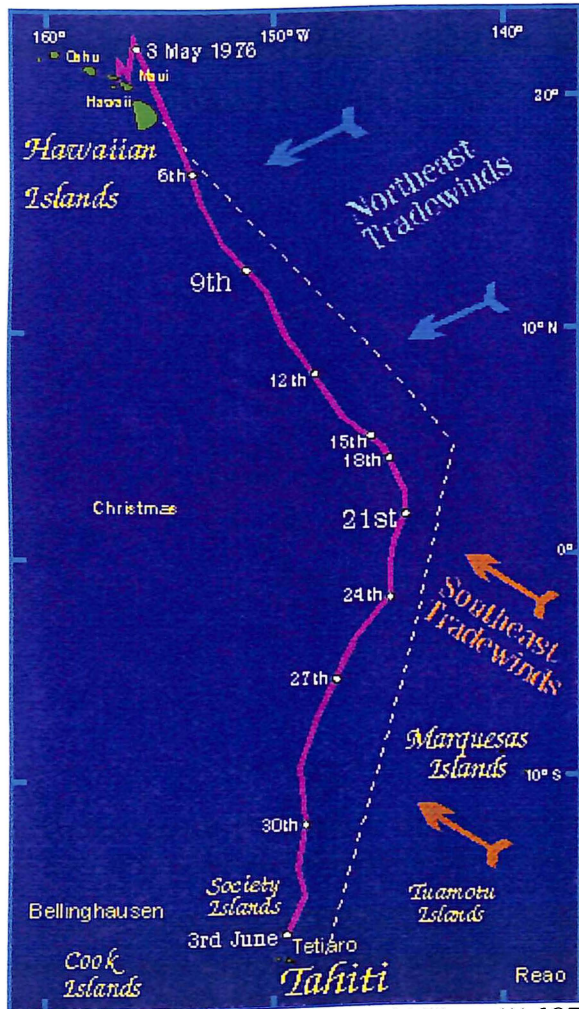
Kāore he kaiwhakatere nō Porinihia, i taua wā, ā, ka tonoa a Mau Piailug. He kaiwhakatere ia nō Satawal, nō ngā moutere o te Carolines. Ka wehe te tekau mā rua o rātou i te 1 o Haratua. Kotahi te marama e rere ana rātou ka kitea te motu, a Mata'iva. E rua ngā rā i muri mai, i te 3 o Pipiri, ka ū atu rātou ki Tahiti. Ahakoa ngā āhukatanga katoa ka pā ki a rātou, i ū tonu te waka hourua nei ki āna mahi, ā, i taea tonutia e Mau te whakatere i te waka.

Ahakoa he rerenga pai ki Tahiti, ka tipu tonu mai tētehi tautohetohe i waenganui i ngā kaumoana. He rerekē nō ngā tikanga Pākehā i ngā tikanga o te tangata whenua o Hawai'i. Ka wehe atu a Mau, ka hoki atu ia ki tōna kāinga mā runga i te waka rererangi.

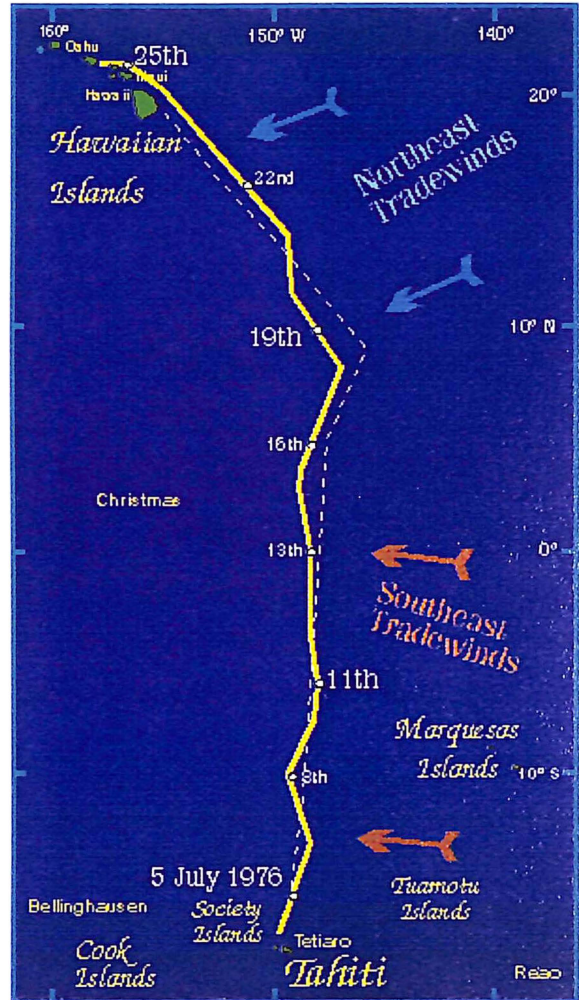
I tau anō te rangimārie ki te waka, ka whiriwhiringia ngā kaumoana hou, ā, i te 4 o Hōngongoi, ka wehe atu i Tahiti. E 22 ngā rā, ka ū atu ki Hawai'i. Heoi anō, he hokinga atu i runga i te āwhina o ngā taputapu Pākehā (arā, he kamupene, he GPS hoki). Ka whakapae tonu atu te PVS, ko te hua o te whakawhitinga nei, kua huri ngā whakapono e pā ana ki ngā whakapae a Andrew Sharp.²²

²¹ He taputapu nō te ao hou e āta kōrero ana, kei whea koe e tū ana, arā ko te Global Positioning System.

²² tirohia te *Internet*: <http://leahi.kcc.hawaii.edu/org/pvs/1976.html>



Whakaahua1: Tahiti ki Hawai'i 1976



Whakaahua2 : Hawai'i ki Tahiti 1976

1978 Ka Tahuri A Hōkūle'a

Ka whakaritea tētehi atu rerenga mō te marama o Poutū-te-rangi, i te tau 1978, engari ka raru te waka hourua nei, a Hōkūle'a. I te wehenga atu i O'ahu, ka kaha pupuhi mai a Tāwhiri-mātea, ka ngaru nui mai a Tangaroa. Nā te rahi o ngā kai me ngā taputapu, ka taumaha rawa te waka, ā, i roto i te moana teitei kāore e ngāwari ana te rerenga. Nā wai rā ka kī tētehi takere i te pōrutu mai a Ngaru-nui, ā, ka tahuri te waka. I reira, i waenganui i ngā motu o O'ahu me Moloka'i, ka tauawhi ngā kaumoana ki ngā takere. Ka pō, ka ao, i reira tonu rātou e pipiri ana.

Mā runga papa retingarū²³ ka wehe atu a Eddie Aikau ki te tiki āwhina. Ka ngaro noa atu ia ki te moana, mate atu. Ka whakaoratia ngā kaumoana e piri ana ki te waka, engari anō a Eddie, kāore i kitea.

Nā taua matenga rā, ka whakarite he reo irirangi mō runga i te waka, ka whakaritea hoki he poti tautoko hei whai i te waka hourua, kia kua taua āhuetanga e pā mai anō ki a Hōkūle'a.

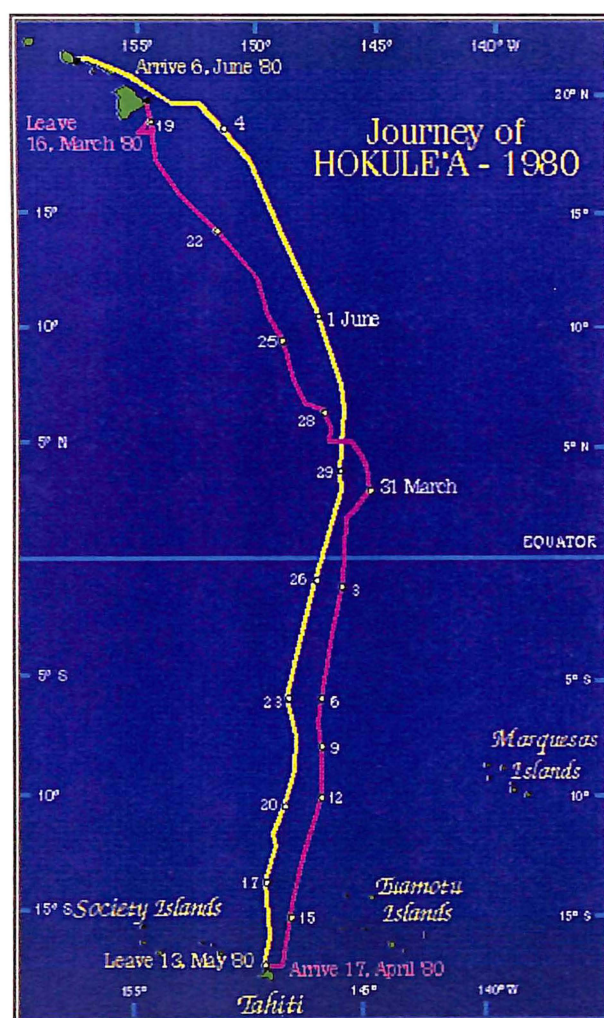
1980 Hawai'i - Tahiti - Hawai'i

Ko tētehi hua o te rerenga i te tau 1976, ko te whakatupu i te aroha me ngā whakaaro nui mō te kaupapa waka hourua nei. He mea whakamana, he mea whakaihiihi i ngā iwi o Poronīhia. Ko tērā a Nainoa Thompson me tōna ngākaunui mō te mahi whakaterere a Mau. Ka matenui a Nainoa ki ngā mātauranga whakaterere waka hourua. Te tini o ngā hāora ka noho a Nainoa i raro i te Whānau Mārama akoako ai i ā rātou rerenga. Ka haere a Nainoa ki te Whare Mātai Rangihori,²⁴ i te Whare Taonga a Bishop. I reira a Will Kyselka e āwhina ana i a ia. Ka whai wā roa hoki a Nainoa ki te noho i te taha o Mau. Kāore e mārāma ana te katoa o ngā mōhiotanga a Mau ki a Nainoa, heoi, i te otinga, nā ngā akoranga a Mau me tōnā ake akoranga ka whakaritea e Nainoa

²³ he kupu nō te Taura Whiri I Te Reo Māori (68/T) mō te *surfboard*.

he huarahi e taea ai e ia te whakaterere waka hourua.¹

Ko Poutū-te-rangi te marama, i te tau 1980, ka puta atu anō a Hōkūle'a ki te moana nui. Ko Nainoa Thompson te kaiwhakaterere waka. Kāore āna titiro ki te kamupene, ki te GPS, otirā ki ngā taputapu Pākehā. Ka whakaterengia a Hōkūle'a, tae rawa ki Tahiti, arā, mō ngā rā 33. Kotahi te marama ki reira. Ka hoki atu i Tahiti, i te 13 o Haratua, ka tae anō ki Hawai'i i te 8 o Pipiri. Nō reira, e rua ngā rerenga i te moana nui. Koia nā te wā tuatahi, mō ngā rautau maha, kua whakaterengia he waka hourua e tētehi o ngā iwi o Porinīhia, i runga i taua ara moana.



Whakaahua 3: Ngā Rerenga a Hōkūle'a i te tau 1980

¹ Ko ngā kōrero i te Ūpoko IV, he mea tuku iho i ngā akoranga whakaterere waka a Nainoa Thompson.

1985-1987 Te Moananui-ā-Kiwa

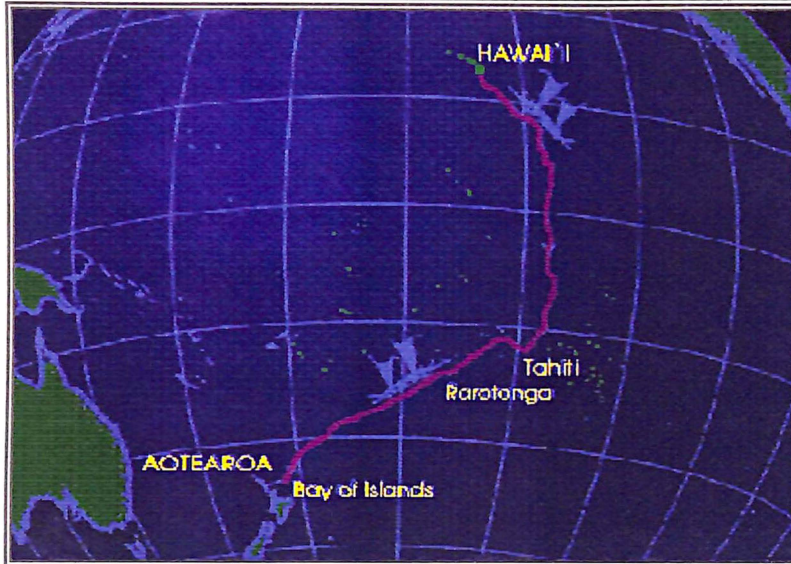
Ka ara ake te tūmanako kia rere a Hōkūleʻa ki te rahi o ngā moutere me te maha o ngā iwi i te moananui- ā-Kiwa. He mea whakatairangi i aua iwi me te mahi whakatere waka i mahingia e ō rātou tūpuna. He mahi rangahau, he wā ako i ngā āhuatanga a te rerenga waka hourua i aua takiwā o te moana. Nō reira;

Ka Haere ki Aotearoa

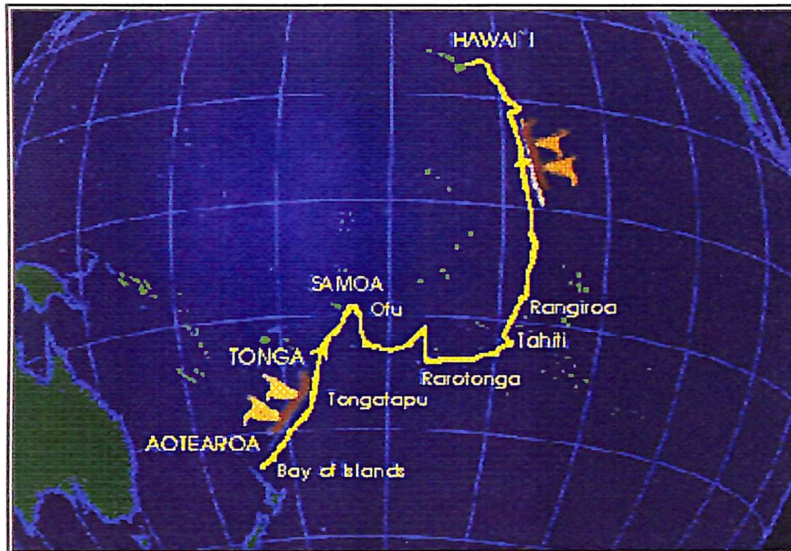
- ka wehe a Hōkūleʻa i Hawaiʻi, ka tae atu ki Tahiti
(Hōngongoi 10 : Here-turi-kōkā 11, 1985)
- ka wehe i Tahiti, ka tae atu ki ngā Kuki Airani
(Here-turi-kōkā 30 : Mahuru 14, 1985)
- ka wehe i ngā Kuki Airani, ka tae atu ki Aotearoa
(Whiringa-ā-rangi 21 : Hakihea 7, 1985)

Ka Hoki ki Hawaiʻi

- ka wehe i Aotearoa, ka ū atu ki Tonga, ā, ka peka atu ki Hamoa
(Haratua 1 : Haratua 11, ā, Haratua 23 : 25, 1986)
- ka wehe i Hamoa, ka tae atu ki Ngā Kuki Airani , ā, ka whiti atu ki Tahiti
(Hōngongoi 7 : 16, ā, Here-turi-kōkā 12 : 21, 1986)
- ka wehe i Tahiti ka tae atu ki te motu o Rangiroa
(Paenga-whāwhā 2 : 4, 1987)
- ka wehe i Rangiroa, ka tae rawa atu ki Hawaiʻi
(Paenga-whāwhā 22 : Haratua 21, 1987)



Whakaahua 4: Hawai'i ki Aotearoa 1985



Whakaahua 5: Aotearoa ki Hawai'i 1986-1987

I roto i ngā tau e rua kua whakawhitingia e te waka, a Hōkūle'a ngā maera nuku atu i te 12,000. He mea patu i ngā whakapae e kī ana, kāore e taea e te waka hourua te whakauru ki ngā hau i pūmau mā te Whitinga¹ (whērā, i ngā rerenga mai i Hāmoa, tae atu ki Tahiti). He mea patu hoki i ngā whakapae e kī ana, kāore e taea e te waka hourua te whakawhiti ki Aotearoa me te hoki atu ki ngā moutere i waenganui i te Moana-ā-Kiwa.²

¹ Sharp 1956:154.

² Sharp 1956:32.

1992 Hawai'i - Tahiti - Kuki Airani - Tahiti - Hawai'i

I te marama o Pipiri, 1992, ka wehe anō a Hōkūle'a ki Tahiti. E 29 ngā rā te roa o taua terenga, ā, ka tae ki Tahiti i 13 o Hōngongoi. I te Mahuru, ka rere anō te waka ki Huahine, me Rai'atea. I reira ka huihui ngā kaiwhakaterere o ngā waka hou. Ka karakia, ka wānangangia ngā mahi o te whakaterere waka hourua.

Ka oti ngā whakaritenga i Rai'atea, i Borabora hoki, kātahi ka whakawhiti a Hōkūle'a ki ngā moutere o te Kuki Airani.

I te 21, i te marama o Whiringa-ā-nuku ka huihui ngā waka ki Rarotonga. Koia nei te wāhanga waka o te huihuinga nui, e kī ana, ko te *6th Festival Of The Pacific Arts*. Tekau mā ono ngā waka i tae atu, nō ngā moutere maha o te Moananui-ā-Kiwa. Ko Hōkūle'a tētehi.



Pikitia 2: Ētehi waka i Rarotonga, i te 6th Festival Of The Pacific Arts

Ko te whakaaro, i te mutunga o te huihuinga i Rarotonga, ka whakawhiti tōtika a Hōkūle'a ki Hawai'i. Heoi anō ka tukua e Tāwhiri-mātea he aroha, he puhi mā te Tomakanga, ā, nā taua aronga i āhei ai a Hōkūle'a ki te rere atu ki Tahiti. Ka whēnā, e whā ngā rā e whanga ana a Hōkūle'a, i Tahiti, kātahi ka tika anō te hau, ka wehe atu a Hōkūle'a ki tōna wā kāinga. E 25 ngā rā i muri mai, i te ata o te 30 o Whiringa-ā-rangi ka kitea e rātou a Mauna Kea, te maunga nui i te moutere o Hawai'i.

I ngā rerenga nei a Hōkūle'a, i te tau 1992, ka whoatu a Nainoa i te mahi whakaterere waka ki ētehi atu. I te whakawhitinga ki Tahiti, ka whakaterere takitahi a Chad Baybayan rāua ko Shorty Bertelmann. I ngā whakawhitinga i waenganui i ngā motu o Tahiti me Kuki ka riro mā Chad Baybayon rāua ko Keahi Omai. I te hokinga atu ki Hawai'i ka whakaterere takirua a Bruce Blankenfeld rāua ko Kimo Lyman. He pūāwaitanga aua tohunga whakaterere waka i ngā akoranga a Nainoa Thompson.

Hawaiki-nui

I te raumati, i te tau 1985, ka puta atu te waka nei, a Hawaiki-nui ki te pae o waho.²⁸ Ko ngā takere, he tōtara nō Aotearoa, e rua tekau mā rua mita te roa. He rau kokonati ngā taura, he rākau inanga²⁹ ngā tokotū, he rākau inanga ngā kahokaho. Nā Matahi (Greg) Whakataka-Brightwell te kaupapa i whanake. Nāna ngā rākau i whiriwhiri, nā rātou ko āna ākongā ngā takere i tārai. I runga i te tono a Francis Cowan ka kawea ngā rākau ki Tahiti, ki reira hanga waka ai. Nuku atu i te rima tau te roa kia hangaia te waka hourua nei.

I aua tau o te hangānga o te waka, ka āhua mōhio rātou ki te toro me te takoto o ngā whetū, te rā me te marama, me te rere hoki o aua whānau mārama. Ki ō rātou whakaaro, ko te marama kī, ko te rākau-nui, te wā tika hei wehe atu kia maumahara ai rātou ki te takoto o ngā whetū i runga i te rangi.³⁰

Tokorima i runga i te waka hourua a Hawaiki-nui, ko Franis Cowan te kaiārahi, te tumuaki. Ko Alex Roper hoki he kaiārahi, ā, ko Matahi tētehi o ngā kaumoana. Ko ngā rerenga tuatahi i takihia ngā moana o Tahiti. Nā, ka wehe atu i Tahiti, i te 31 o Whiringa-ā-nuku, 1985, ka tae atu ki Moorea, ki Huahine, ki Rai'atea. I Rai'atea ka wānangangia e ngā kaumoana nei me te tangata whenua ngā ara moana tawhito o ō rātou tūpuna.

²⁸ Ko ngā kōrero e pā ana ki a Hawaiki-nui he mea tuku mai i a Whakataka (1995), i a Kaa (1994), i a Finney (1994), i a Taonui (1994).

²⁹ he kupu nō te Taura Whiri I Te Reo Māori (58/T) mō te *bamboo*.

³⁰ Kaa 1994:16.

Tekau mā tahi ngā rā ka tae atu ki Rarotonga i Rai'atea, heoi, i te nuinga o te wā kua kino te patu mai a te haumātakataka. E rua ngā wiki ki Rarotonga e whakahoutia ana te waka, ā, i te 28 o Whiringa-ā-rangi ka wehe whenua atu. He whakawhitinga roa, he whakawhitinga uaua kia tae atu ki te Ika-ā-Maui. He wā ka nohopuku te waka, he wā anō ka pā mai ngā tūpuhi.

E rua tekau mā rua ngā rā ka tae ki te takiwā o Tūhua. I mua tonu i te paenga ki te whenua ka karawhiu anō mai te āwhā, ā, tae rawa ki te rā whakamutunga o taua tau i te noho te waka rangatira nei i te pae o waho. Ka whakaotihia te whakawhitinga nei i te tōnga o Hawaiki-nui e tētehi poti hao ika ki roto i te whanga, i Wharekāhika.

Te Aurere

I te 8 o Hakihea, i te tau 1985, i pōwhiritia a Hōkūle'a i Waitangi. Ka tū a James Henare, ka whakamārama i te harikoa o tōna ngākau i te kitenga i a Hōkūle'a me tōna tūmanako hoki, ā tōnā wā, ka hāngaia he waka hourua i Aotearoa nei hei hoki atu ki ngā moutere o te Moananui-ā-Kiwa. Ka mau tonu taua moemoea hei kai-hinengaro mā Hekenukumai Puhipi.³¹ I te tau 1991 ka kawea ake a Hekenukumai i te manuka kua whakatakatoria e James Henare.

Ka tonoa āwhina Te Tai Tokerau Tārai Waka Inc. e Hekenukumai, he rōpū kua whakatūngia hei whakahouora i ngā kaupapa waka.³² I Kohi-tātea, 1991, ka turakina ngā kauri e rua i te ngahere o Herekino, ā, i mua i te mutunga o te tau kua hangaia e Hekenukumai mā, te waka a Te Aurere. Tekau mā whitu mita te roa o ngā takere. I taua wā kotahi noa iho te tokotū, i muri mai ka whakahoutia kia rua ngā tokotū.

I te tau 1990 ka tīmata ngā akoranga a ngā kaihoe mō te rerenga i te tau 1992. Ka āwhinatia mai e te PVS, e Nainoa Thompson rātou ko Mau Piailug.

³¹ He mea kōrerotia mai e Hekenukumai, i te Pipiri, 1995.

³² Gabel 1995:A5-A11.

1992 Aotearoa - Rarotonga-Aotearoa

Ko te kaupapa o te whakawhitinga i te tau 1992, ko te taenga ki Rarotonga mō te *6th Festival Of The Pacific Arts*. Nā taua wawata ka puta atu a Te Aurere ki te pae o waho i waenganui i te marama o Whiringa-ā-nuku. He wā tonu tēnā o ngā haumātakataka, he āhuatanga i kitea e Te Aurere me āna kauhoe. I ētehi wā, he taikaha nō te makamaka mai a Tāwhiri-mātea, he papā nō te whati mai o ngā ngaru. Heoi anō he maia tonu ngā kaumoana tekau mā tahi rā. I runga hoki a Mau Piailug, hei āwhina i te mahi whakatere, me Clay Bertelmann (nō Hawai'i), hei āwhina i te mahi whakahaere i te waka.

I ngā wā o te hau kore, ka āwangawanga rātou mō te taenga takaroa ki Rarotonga, ka whītikingia ki te poti tautoko hei kukume i a rātou. I te otinga atu, ka ū atu a Te Aurere ki Rarotonga i 22 o Whiringa-ā-nuku, kotahi noa te rā i muri mai i te rā kua whakaritenga.

Ka oti i ngā wāhanga o te huihuinga i Rarotonga, ka wehe atu a Te Aurere. Tekau mā waru ngā rā o te hokinga atu ki Aotearoa, ā, ka whakatata ki Aotearoa ka karawhiua anō mai te āwhā nui. E toru ngā rā ka patu mai, ā, ka whati te tokotū. Nō konā, ka whakaoti ai ngā maera 100 i te mutunga nā te tōnga o te poti tautoko.

1993-1994 Taiāwhio i te Ika-ā-Maui

I ngā kaupeka o te raumati, 1993-1994, ka taiāwhio a Te Aurere i Te Ika-ā-Maui. Ka tere atu te waka rangatira nei ki ngā marae 17 kei ngā tōpito o te motu, mai i te Tai Tokerau, tae atu ki te Hau-ā-uru, ki te Ūpoko-o-te-Ika, whakawhiti atu ki te Waipounamu, ki te Tai Rāwhiti, ā, ka hoki rawa atu ki Te Tai Tokerau. Ko te kaupapa o te rerenga nei, he tohatoha atu i ngā mātauranga me ngā kōrero o te waka hourua. Ko ētehi o ngā wānanga ki whakatūngia i rō whare, ko ētehi ki runga i te waka nei.

I te otinga o ngā mahi i tētehi takiwā, ka whiriwhiringia ngā kaumoana hou tokotoru, tokowhā rānei nō taua takiwā tonu, hei rere atu ki te takiwā hou. Nō

reira, i roto i ngā marama e whā, ka tokomaha ngā kaumoana i waimārie i te rironga o te wā hei rere mā runga i te waka hourua a Te Aurere.



Pikitia 3: Te Aurere, i tāna wehenga atu i Marquesas, i te tau 1995

Ngā Rerenga I Te Tau 1995

Ka tū tētehi huihuinga waka hourua miharo rawa ki ngā moutere o Tahiti, i te Marqueses, me Hawai'i i ngā marama mai i Poutū-te-rangi, tae atu ki Haratua, i te tau 1995.¹ Ko ngā waka i reira e whēnei ana;

- nō Hawai'i - ko **Hōkūle'a**,
- ko **Hawai'iloa**; he waka hourua i hangaia i te tau 1973. Ko ngā takere he rākau 'Sitka' nō Alaska, 57 putu te roa.
- ko **Makali'i**; ka whānau mai i te tau 1995, ko ngā takere he mea papakaka, 54 putu te roa.

¹ Tirohia te *Internet* <http://leahi.kcc.hawaii.edu/org/pvs/L3Nukuhiva.html>, Thatcher 1995:A15-A20.

nō Tahiti - ko **Tahiti-nui**, he waka kua whakahoutia i runga i ngā takere o te waka Hawaiki-nui. E 70 putu te roa o te waka nei.
- ko **A'a Kahiki-nui**, he mea hanga ki te rākau kuru, e 40 putu tōna roa.

nō Rarotonga - ko **Te Au o Tonga**, he waka hourua, e 70 putu te roa i hangaia ki te rākau kahupapa i te tau 1995
- ko **Takitumu**, he waka hourua i tāraia mō te huihuinga i Rarotonga, i te tau 1992. E 60 putu tōna roa, ā, i hangaia ngā takere ki te kahupapa.

nō Aotearoa - ko **Te Aurere**.

Ka huihui ngā waka a Hōkūle'a rātou, ko Hawai'iloa, ko Tahiti-nui, ko Takitumu, ko Te Aurere, ki waho i te moutere o Rai'atea. Hāunga a Te Aurere, kua rere mai ēnei waka i ō rātou ake wā kāinga. I te ata, 18 o Poutū-te-Rangi, ka pōwhiritia ki te marae o Taputapu-ātea. Ka ū atu ngā waka, ka whakatau, ka tukua ngā pure me ngā whāinga. Ka oti ngā karakia ka rite ngā waka mō ngā whakawhitinga moana e haere mai ana.

Ko te wāhanga nui tuarua mā ngā waka nei, ko te whakawhitinga atu ki Nukuhiva, arā, ki te Marqueses. Nā te aronga o te hau me te potoo te wā i tōngia te nuinga o ngā waka hourua ki reira. Tae atu ki te 12 o Paenga-whāwhā ka tūtū te katoa o ngā waka hourua ki Nukuhiva. Ka pōwhiringia ngā waka, ka whakaritea mō te wāhanga e whai mai ana.

Ko te wāhanga tuatoru, ko te whakawhitinga i Te Marquesas ki Hawai'i. He whakamātautau nui i ngā kaiwhakaterere waka hourua. E ono ngā waka hourua i rere, e rima ngā waka ka titiro anake ki ngā tohu a te taiao hei arataki i te waka. E whēnei ana ngā kaiwhakaterere;

Hōkūle'a - Chad Baybayan

Hawai'iloa - Bruce Blankenfeld

Makali'i - Shorty Bertelmann

Te Au o Tonga - Tua Pittman rāua ko Pe'ia Tua'ati

Takitumu - ka tirohia te kamupene me te GPS

Te Aurere - Piripi Evans rāua ko Jack Thatcher

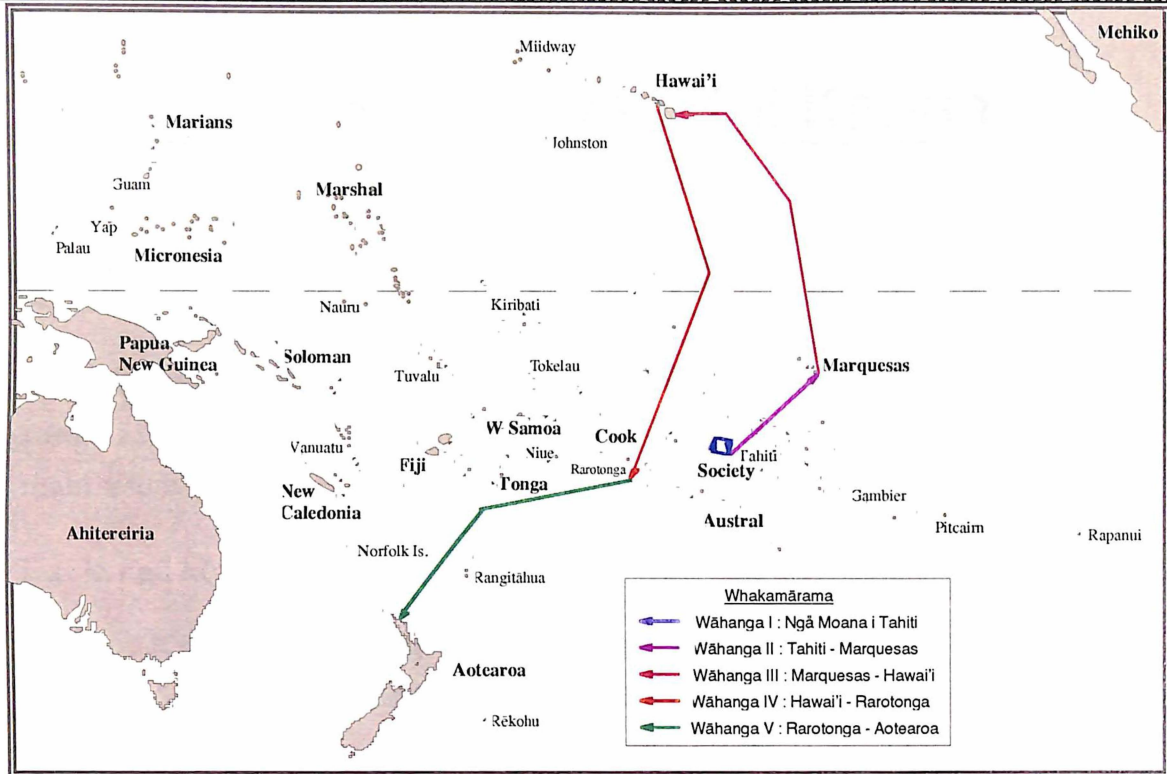
Ka whakaputa i Nukuhiva a Hawai'iloa, rātou ko Makali'i, ko Te Aurere i 19 o Paenga-whāwhā, ā, ka whai atu a Hōkūle'a rātou ko Te Au o Tonga, ko Takitumu i te 20 o Paenga-whāwhā. Kāhore ngā waka o Tahiti i te wehe, nō te mea, kāore anō kia whakaritea, kāore anō kia whakapakaritia aua waka mō te whakawhitinga roa pēnei.

E rua wiki me te hāwhe, ā, ka tae katoa mai ngā waka hourua nei ki te whanga o Hilo i Hawai'i, ā, ka whai mai ko ngā hui whakanui i a rātou. Nō reira, e rima ngā waka kua whakaterengia i raro i ngā āhuatanga tawhito, mō te rerenga nui ake i te 2000 maera te roa.

I muri mai, i te marama o Pipiri ka tukua a Hōkūle'a rāua ko Hawai'iloa ki te Tai Hau-ā-uru o Amerika. I tere rāua i ngā moana o reira mō ngā marama e rua, hei whakaaturanga, hei mihi ki ngā iwi o reira. Ka whakawhiti atu a Te Au o Tonga, rātou ko Takitumu, ko Te Aurere ki te moutere o Rarotonga, i taua marama tonu.³⁴

I te 30 o Whiringa-ā-rangi ka ū atu a Te Aurere ki te takutai o Te Aurere, i Taipa. E 20 ngā rā, te roa a te whakawhitinga mai i Rarotonga, ā, kāore ōna raruraru i te whakawhitinga nei.

³⁴ kei te Ūpoko V te rahi o ngā kōrero e pā ana ki taua whakawhitinga a Te Aurere.



Whakaahua 6: Ngā Rerenga a Te Aurere i te tau 1995

I te tau 1995, e whā ngā whakawhitinga nui kua takahia e Te Aurere, mō ngā maera nuku atu i te 7500. He waka rangatira te waka hourua a Te Aurere, otirā ngā waka hourua katoa, kua whakawhiti i ngā moana nui.

Whakarāpopotonga

I te Ūpoko nei kua whakarāngitia ngā whakawhitinga moana nui, nuku atu i te toru tekau. I tīmata i ngā kōkiri tuatahi a Hōkūle'a, ā, kua oti i ngā rerenga i te tau 1995. E tika ana he kaha te rapu a ngā iwi o Poronīhia i ngā tikanga whakaterere waka hourua a ō rātou mātua tūpuna. Me kī, ko Poupaka anō tēnā e whakaterere ana.

Nō reira, kua kitea ngā kōrero kei roto i te pukapuka i te Ūpoko I, kua kitea ngā terenga i runga i te moana i te Ūpoko II nei, ā, te tikanga ka māmā noa te kitenga, ka taea te whakaterere waka hourua ki runga i te moana nui. Ko te whakaaturanga e rere mai ana i te Ūpoko III, me pēwhea rā taua mahi whakaterere waka hourua.



Ūpoko III: He Waewae Kai Kapua

He Whakamārama

Ko te kaupapa o tēnei ūpoko ko ngā tikanga o te mahi arataki waka hourua i runga i te moana nui. Ka whakatakoto i ngā huinga whakaaro e pā ana ki te mahi a te kaiwhakaterere waka.

E ai ki ngā kōrero...

“Kāore E Tae Te Waewae Kai Pakiaka Ki Te Waewae Kai Kapua”

...kōia nei te whakaaro nui i te ūpoko nei; ki te tika ngā whakaritenga, ki te tika ngā akoranga, ka kai kapua ngā waewae o te waka hourua.

Ko te nuinga o ngā kōrero nei he mea whanake mai ai i ngā wānanga-ā-marama o Te Aurere, i tū ai i Taipā, i te Tai Tokerau.³⁵ I ngā tau 1994-1995 ka tū aua wānanga tekau mā whā kia whakarite ai i ngā kaumoana mō ngā rerenga o Te Aurere i te tau 1995. Nō reira, ko ngā whakawhitinga whakaaro nei he mea ka uru mai i aua hui me ngā mahi-ā-ringa.

E tika ana, kua ara kē mai ngā kōrero nei nō te waka hourua o Te Aurere, engari he mātauranga mō ngā waka hourua katoa, ahakoa i whea, ahakoa nō tēwhea rautau. Ko tōku nei whakapono, ko te mahi whakaterere waka a Te Aurere e āhua ōrite ana ki te mahi whakaterere waka o ngā tūpuna Māori i te wā i whakawhiti mai rātou ki Aotearoa nei. He whakatakoto huarahi kia tae ora atu ai, he tirohanga ki ngā atua o te taiao kia āwhinatia te kauhoe i runga i taua huarahi. Ka pērā i ngā wā o mua, ka pērā hoki i te ūpoko nei.

³⁵ Ko ngā tohunga i reira, ko Hekenukumai Puhipi, ko Stanley Conrad, ko Charlie Wilson. Ko ngā tohunga o te mahi whakaterere waka hourua ko Jack Thatcher rāua ko Piripi Evans, he tauira rāua nō Nainoa Thompson. Kei te Ūpoko II ngā kōrero mō Nainoa.

E toru ngā wāhanga whānui o te mahi whakaterere waka, otirā o tēnei Ūpoko.

Tuatahi: ko te **whakarite i te huarahi**. Ka tirohia ngā aronga o ngā pae, te kāpehu Pākehā, te kāpehu Māori me ētehi kāpehu waka hoki. Ka kōrerohia te mahi whakakake ki te hau. Ka kōrerohia hoki ngā whakawhitinga whakaaro e puta pai ai te waka hourua ki te moana, ngā whakawhitinga whakaaro hoki e pā ana ki te tūturutanga o te mahi whakaterere waka hourua nei.

Tuarua: ko te **arataki i te waka**. Ko ngā tirohanga o tēnei wāhanga, ko te tere o te waka me te aronga o te waka. I te aronga o te waka, ko ngā kaupapa ka tirohia ko ngā tohutohu o Ranginui, rātou ko Tangaroa, ko Tāwhiri-mātea.

Tuatoru: ko te **rapu i te whenua**. Ko tēnei te wāhanga hei whakaoti i te rerenga. Ko tā te wāhanga tuatahi me te wāhanga tuarua, he tae ki te takiwā e hiahiatia ana, ko tā tēnei wāhanga he ū ki te whenua.

Te Whakarite Huarahi

I mua i te putanga ki te moana ka wānanga ngā kaiwhakaterere me ngā rangatira. Ka tirohia te waka me tōna whanonga. Ka kōrerotia ngā āhuatanga o ngā rangi me te moana. Ka whakaritea te huarahi me te wā haere. Ka whakataungia ngā utanga. Ka whiriwhiringia ngā kaumoana. Ka tukua ngā mihi ki ngā wāhi e tika ana.

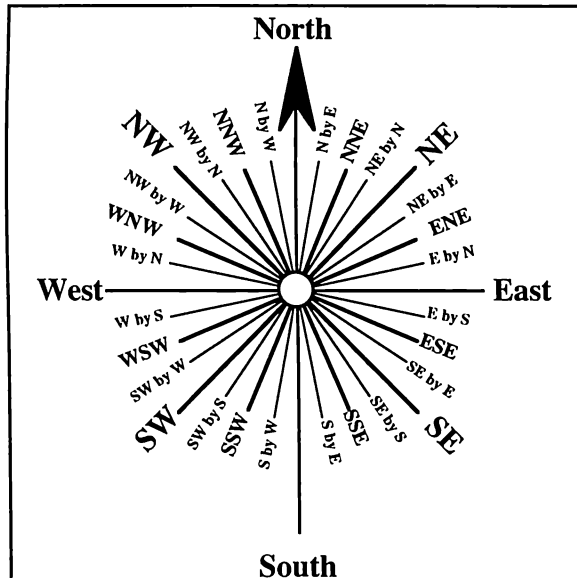
Ko ngā putunga kōrero kei te whai mai i tēnei wāhanga he kupu hei whakareri i te kaipānui mō ngā wānanga o te whakaterere waka hourua. Ka whakaatu i te wehewehenga o ngā pae me ngā puhi pai e rere ai te waka, ka whakaputa whakaaro hoki mō te whakarite waka me te mahi o ngā mīhini Pākehā i runga i te waka.

Te Whakawehewehe I Ngā Pae

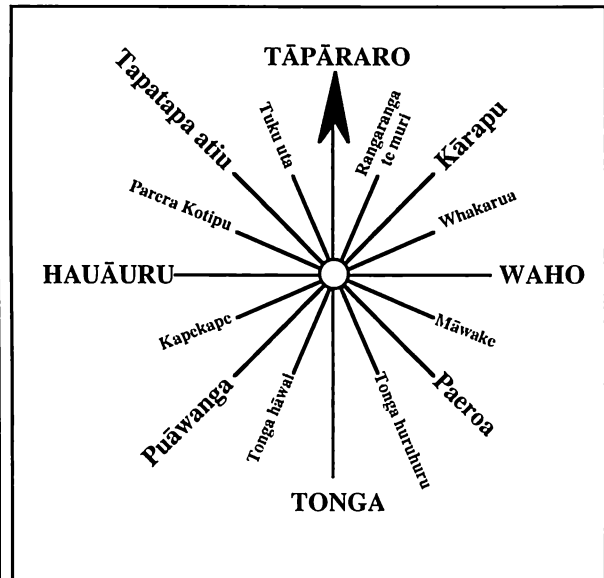
Ka whakawehewehengia e te Pākehā ngā aronga o ngā pae ki te *North, South, East, West* me ngā wāhanga iti i waenganui. Ko tā te Māori he whakawehe i aua aronga ki ngā mahi a ngā tamariki a Ranginui rāua ko Papatuanuku. Hei

tauirā ko te East ko te pae e whiti mai ana a Tamanui-te-Rā (Rā-whiti), ko te West ko te pae e tomo atu a Tamanui-te-Rā (Tomokanga), ko te pae rānei ka uru mai ngā hau (Hau-ā-uru). He āhuetanga o te rangi tā tēnā iwi, tā tēnā iwi, nō reira, he kupu anō mō aua pae tā tēnā iwi, tā tēnā iwi.³⁶

E whai ake nei ngā ingoa nā te Pākehā mō ngā pae, ngā ingoa hoki nā Mohi Tūrei, nō Ngāti Porou...³⁷



Whakaahua 7: Ngā Pae nō Te Ao Pākehā



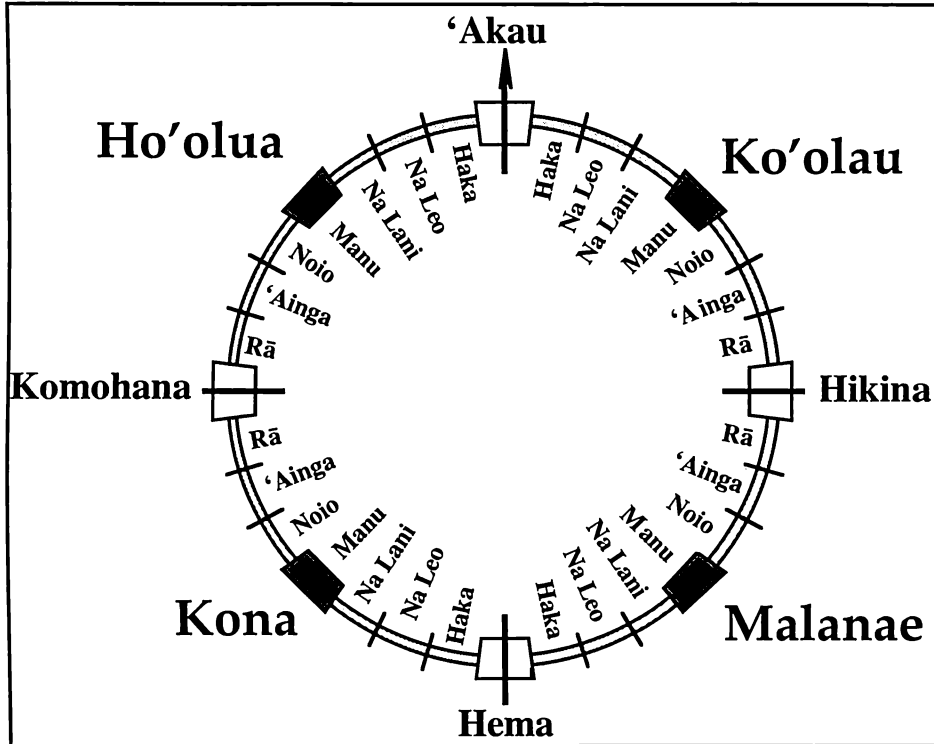
Whakaahua 8: Ngā Pae nō te Ao Māori

Ko te mahai a Nainoa Thompson³⁸ he rangahau kōrero e pā ana ki te whakaterere waka hourua ā ōna tūpuna. Kua whakatūngia ia hei kaiwhakaako i ngā kaiwhakaterere waka o ēnei rā. I runga hoki i ōna tūmanako kia tūturutia ngā mahi, kāore ia i whai i ngā āwhina o te kāpehu, o te GPS, o te mīhini Pākehā. Nō reira, kāore ia i pai ki te kawē i ngā ingoa Pākehā o ngā pae, ā, ka hangaia e ia tētehi kāpehu motuhake. E hāngai tonu ana tana kāpehu ki ngā mahi whakaterere waka, ki te whitinga mai me te tōnga atu o te Whānau Mārama.

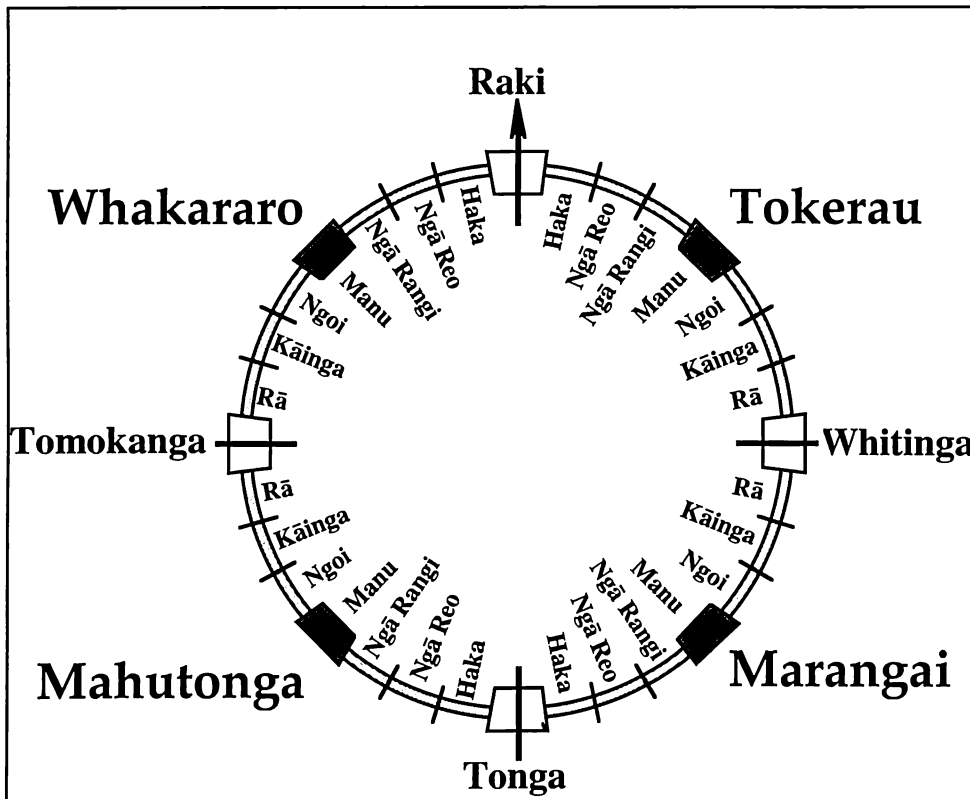
³⁶ Ko ngā kōrero nō te Waipounamu, e ai ki tā Teone Taare Tikao: ko Tonga, ko te SW; ko Tā, ko te West; ko Mauru, ko te NW; ko Wahanui ko te NNW; ko Hau Matua, ko te North; ko Paoa, ko Whakarua hoki, ko te ENE; ko Marangai ko te East. Tirohia te whārangi 47, Tikao Talks nā Herries Beattie, Penguin Books, 1939.

³⁷ Nō Astronomical Knowledge of the Māori, nā Elsdon Best, Government Printery 1972.

³⁸ Tirohia te whārangi 12.



Whakaahua 9: Te Kāpehu nā Nainoa



Whakaahua 10: Te Kāpehu nā Te Aurere

Ka whakawehe a Nainoa Thompson i ngā pae kia whā ngā wāhanga. Kei ia wāhanga e waru ngā 'whare'. Ko tā Nainoa, i te reo māori o Hawai'i, ko te *Whakaahua 9*. Kia māmā ai ngā karu me ngā taringa Māori kua hangaia e ngā kaiwhakaterere o Te Aurere tētehi kāpehu e mau ana i ngā kupu Māori,³⁹ arā, ko te *Whakaahua 10*.

Nō reira, ki te haere te waka ki te South East ka kī atu, kei te ahu atu te waka ki te whare o Manu i Marangai. Ki te haere te waka ki te SSW ka mea atu, e ahu atu ana te waka ki te whare o Ngā Reo i Mahutonga. I roto i tēnei tuhinga roa, ki te kōrero atu i ngā aronga o ngā pae, ka kōrerotia atu ngā aronga kei te *Whakaahua 10*.

Te Whakakake ki Te Hau

Ko te mīhini hei whakahaere i te waka hourua, ko ngā hau me ngā apu o Tāwhiri-mātea. Mehemea e pupuhi mai ana ngā hau i muri, i ngā taha hoki, e āhei ana te waka ki te haere whakamua. Mehemea kei te ahu mai te hau mā mua i te waka e kore e taea e te waka hourua te haere whakamua. Tirohia ngā whakaahua nei;

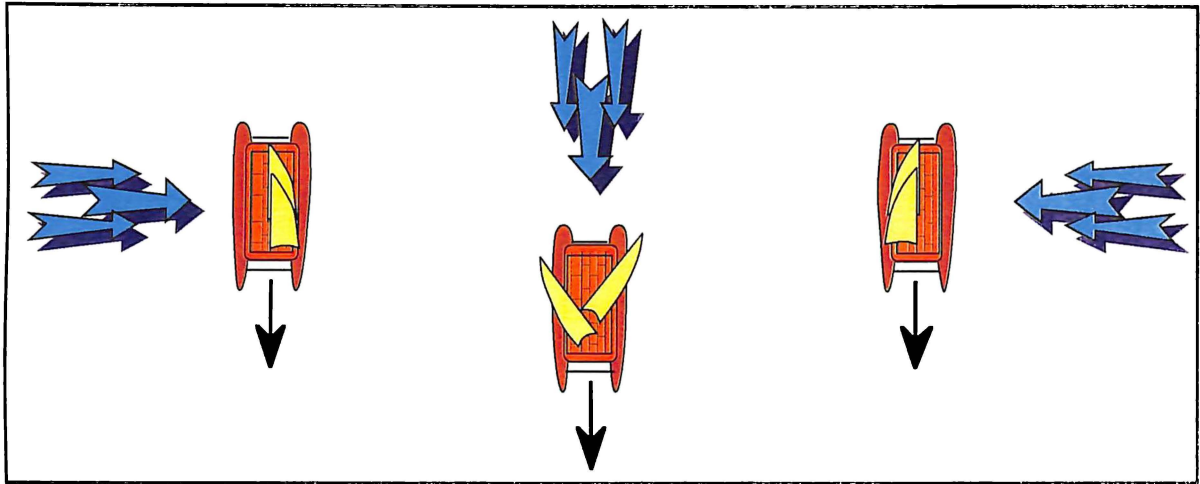
Kei te *Whakaahua 11* ngā hau pai hei nuku whakamua te waka. Mehemea ka pā mai ngā hā o Tāwhiri-mātea i te Tomokanga, ka tītaha atu ngā rā⁴⁰ ki te Whitinga. Mehemea ka pā mai ngā apu i te Whitinga, ka wharara atu ngā rā ki te Tomokanga. Mehemea mā muri mai te ringa kaha o Tāwhiri-mātea, tērā pea, ka whītiki he rā ki tētehi taha, he rā anō ki tētehi atu taha. He uaua ake te urungi o te waka hourua inā he rā kua whakatakoto ki ngā whaitua e rua.

I ētehi wā, ka pupuhi mai te hau mā te aronga kotahi. I ētehi wā, ka karapoti haere te aronga o te hau. Mehemea ka huri taua aronga whakatemua i te waka, ka piupiu noa ngā rā, ā, ka tū kau iho te waka, tē taea te nuku whakamua. E

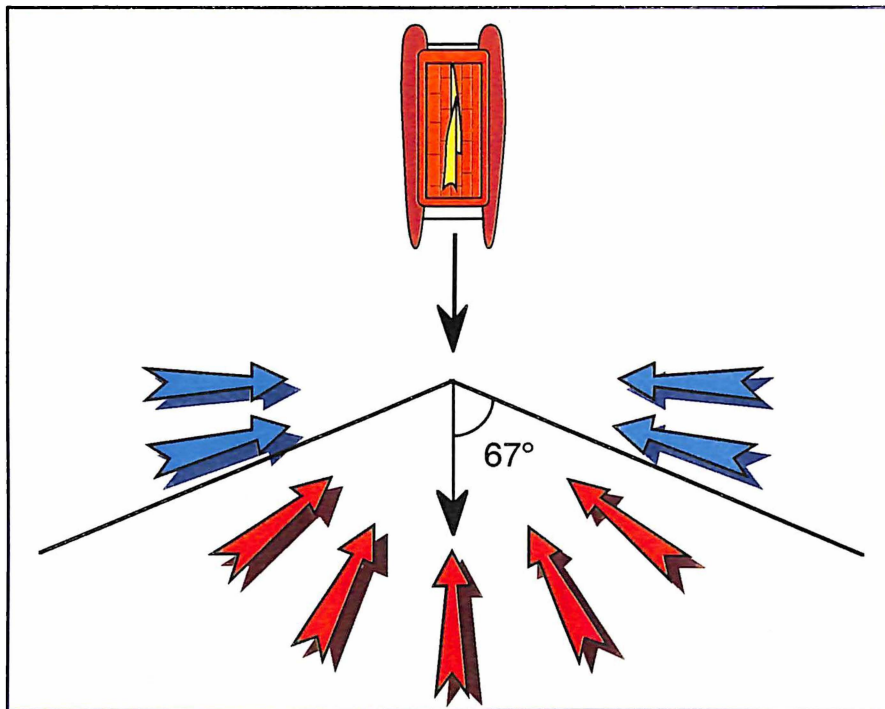
³⁹ Nā ngā wānanga whakaterere waka i tū ai i Taipa, i te raumati 1994-1995. Ehara i te mea kua whakawhitia te katoa o ngā kupu i te reo o Hawai'i ki te reo Māori o Aotearoa, ko ētehi āe, engari ko ētehi kupu kua whakamāorititia nā te tikanga o te kupu, ā, ko ētehi kupu kua whakamāorititia nā runga i te tangi o te kupu.

⁴⁰ ko te rā, ko te wāhanga o te waka e pupuri ana i te hau, arā ko te *hera*.

whakaatu ana te *Whakaahua 12* i ngā aronga hau e āhei tonu ai te waka ki te rere whakamua (arā, ngā tohu kikorangi) me ngā hau e aukati ana i te rerenga whakamua o te waka (arā, ngā tohu whero).



Whakaahua 11: Ngā Hā o Tāwhirimatea Hei Nuku Te Waka Whakamua



Whakaahua 12: Ngā Hau Kore-Nuku

Ka āta whakaarohia ēnei aronga hau i te wā ka whakatakoto i te ara hei whai.

Ngā Whakawhitinga Whakaaro

Ngā Whakaritenga Waka

He maha ngā āhukatanga, i mua i te putanga ki te moana, hei whakaaro ake mā ngā rangatira, mā ngā tohunga, mā ngā kaiwhakaterere waka hoki.

Me whakatau kei whea te waka e wehe ai, ā, ka haere mā hea kia tae ora ai ki te wāhi e hiahia ana. Me whakaaro i ngā āhukatanga o Tāwhiri-mātea, i ngā āhukatanga o Tangaroa hoki i runga i taua huarahi. He mea nui te taupeka o te tau; he wā ka ara ake ngā tūpuhi, he wā ka rere te makariri, he wā anō ka rere te waka hourua. Me whakamātau i te pakaritanga o te waka kia kitea ai mehemea e āhei ana te waka ki te puta ki ngā ngaru teitei o te māhoranui.

Kia tika hoki ngā utanga waka. Kia tika ngā kākahu mō te haerenga. Me kawe he rongoa. Me whakaaro ake mō te roa e waho ana kia kaua e whakapau i ngā kai, i ngā wai hoki i mua i te mutunga. Me āta whiriwhiri i ngā kaumoana; ko ngā āhukatanga ka hiahiatia ko te mātātoa, ko te pukumahi, ko te māhaki me te tau hoki ki te mahi i te moana.

Ko tētehi tirohanga nui, ko te utu. Ki te kore he pūtea hei utu i te hanga waka, hei utu i ngā kai me ngā taputapu e kore rawa te waka e haere.

I roto i ngā mahi katoa o te waka he karakia. Ka nui ngā tuku whakamoemiti ki ngā atua o te rangi me ngā atua o te moana, i mua i te wehenga, i waenganui moana, i te ūnga hoki ki uta.

He Mahi Tūturu

Ahakoia he aha te kaupapa, i roto i te ao hou nei, he maha ngā wā, he maha ngā wāhi, ka rere te pātai nui; he mahi tūturu Māori tēnei, he aha noa rānei? He tino pātai tēnā. Kua urutomo mai ngā tikanga me ngā taputapu Pākehā ki ngā āhukatanga whānui rawa. I ēnei wā me uaua ka kitea ko ngā kōrero tūturu, ngā kōrero i tuku kē mai i ngā tūpuna Māori, ko kōrero rānei kua hāngaia e te

Pākehā i runga tonu i ōna nā whakaaro.⁴¹ I ētehi wā he uaua hoki kia kite ko ēwhea ngā tikanga tūturu, ko ēwhea rānei ngā tikanga kua urutomo mai nā ngā tikanga Pākehā. Ka whēnā hoki ngā kōrero mō ngā waka hourua. E tika ana kia rua ngā rā o te waka hourua,⁴² kia toru rānei.⁴³ E tika ana kia 32 ngā kaumoana,⁴⁴ kia 12 rānei.⁴⁵ E tika ana kia 17 mita te roa o te waka,⁴⁶ kia 20 mita rānei.⁴⁷ Ko wai ka hua, ko wai ka tohu?

Kāore e kore ko te whakapae o ētehi, ki te hiahia te tangata ki te mahi tūturu Māori ai i ngā mahi me whakarere iho i ngā āhuetanga me ngā taputapu Pākehā katoa. Kia hāngai taua whakaaro ki te whakawhitinga moana, ka whēnei te āhua pea: kia kore he taputapu Pākehā ki runga i te waka, pērā ki te reo irirangi, pērā ki te mīhini poti, pērā ki te umu, pērā ki te waka rauora,⁴⁸ pērā ki te raiti, pērā ki te pene me te pepa; me kai ngā kaumoana i ngā kai tūturu; me mau rātou i ngā kākahu tūturu; me whakamahi rātou i ngā taputapu tūturu pērā ki ngā hue wai me ngā kōhua kai, whērā hoki ki ngā matau me ngā aho hī-ika; me whakatere te waka mā runga i ngā tohu a ngā atua anake; me hanga te katoa o te waka ki ngā tikanga tawhito, he rākau kua whakapiringia ki ngā taura kokonati, he rā raurau, he moenga whāriki; me tārai te waka ki ngā toki pounamu, ki ngā matā tūhua rānei, ā, i ngā wā tika katoa, i ngā wāhi tika katoa, me whakataki i ngā karakia.

Ki te pupuri i te katoa o aua āhuetanga kātahi ka whakawetongia ngā whakapae katoa, e kī ana, “Ehara tēnei i te mahi tūturu Māori”. Engari me whēnā rawa te mahi? Ka nui rawa te utu kia riro mai ai aua taputapu, ka roa rawa te wā ki te rapu i aua taonga, ā, i te tōnga o te rā he aha ngā kōrero kua whakatauria, he aha ngā kupu kua whakaponongia? Ki a au nei, i runga i te poto o te wā, kāore he take nui ki te whakatipu tahā takawai mehemea ka

⁴¹ Tirohia ‘The Great New Zealand Myth’ nā D. R. Simmonds.

⁴² e rua ngā rā i te waka a Te Pū Whenua, Matorohanga(1913) JPS 22 whā. 193.

⁴³ e toru ngā rā a Te Aurere.

⁴⁴ ka whēnei pea te tokomaha i runga i te waka o Tainui, Kelly (1949), whārangi 40.

⁴⁵ tekau mā rua ngā kaumoana i runga i te whakawhitinga nei a Te Aurere.

⁴⁶ 17 te roa o te waka Te Aurere.

⁴⁷ e 20 mita te roa o te waka o Tainui, Kelly (1949), whārangi 40.

⁴⁸ he kupu nō te Taura Whiri I Te Reo Māori (105/T) mō te *life boat*.

māmā noa te tiki i te pātara parahitiki, kāore he take nui ki te whatu i te pākē mehemea he māmā noa te hoko tāpōrena. E tika ana pea, ka meha haere ngā wairua me ngā mauri o ngā taputapu i te tiki i te mea Pākehā, engari me aha kē? Mehemea kei te ao tonu ngā taputapu Māori nō neherā, ka whakamahia. Heoi anō, kei te ngarongaro haere aua āhukatanga, kei te ngarongaro haere aua mōhiotanga. He take kia whakaorangia ai aua taonga engari he kaupapa anō.

He uaua te whakakaupapa huarahi, i ēnei rā, me te kī, “he tikanga tuku iho ngā āhukatanga katoa o taua mahi”. Ki a au nei me whai tētehi huarahi ko ngā mahi nui, he mahi Māori nō neherā, ā, ko ngā mahi iti noa iho ka taea te uru mai ngā tikanga nō tauwiwhānui. Hei tauira, i runga i te moana ka kaingia e mātou te raihi, te *noodles* me ētehi atu kai nō tauwiwhānui, ka moe mātou i raro i ngā pēke moe, ka whakamaui e mātou ngā ārai hihirā,⁴⁹ ngā pōtae me ngā mōwhiti pango. Engari ko te mahi nui ko te whakawhiti a te waka hourua i te moana nui mā runga tonu i te arataki mai a ngā tūpuna atua. Nō reira, ko tōku ngākau e whakapono ana, i whāia e mātou ngā mahi tuku iho, ngā mahi whakatere waka hourua i mahia ai e ngā tūpuna Māori.

Ko te kaupapa o tēnei tuhinga roa, ko te whakatere waka hourua. Ki a au nei, kāore kau he māharahara mehemea kei te mau piupiu te kaumoana, kei te mau *Levis* rānei, kāore kau he āwangawanga mehemea kua whatu te rā ki te raurau, ki te *dacron* rānei, kāore hoki he raruraru mehemea kua tunua ngā kai e te ahipua, kua tunua rānei e te tō haumāori.⁵⁰ Ki a au nei, he mahi Māori tūturu te whakatere waka hourua mehemea ka whakawhiti mai i tētehi moutere ki tētehi atu me te:-

⁴⁹ he kupu nō te Taura Whiri I Te Reo Māori (68/T) mō te *sun block*.

⁵⁰ he kupu nō te Taura Whiri I Te Reo Māori (68/T) mō te *gas stove*.

* kore titiro ki ngā taputapu Pākehā e whakaatu ana i te aronga me te wāhi tū, arā, he kore titiro ki te kāpehu, ki te GPS, ki te hihiani,⁵¹ ki te mapi, ki te wāti.

* kore tō a te waka hourua i tētehi atu poti, i te mīhini poti rānei, hāunga i ngā taiwhangawhanga.⁵² Mā tōnā ake ngoi anake e whakawhiti ai te moana nui.

Ki a au nei, ki te pupurutia aua tikanga e rua, ka taea te kī, “he tikanga tawhito i whāia e te waka hourua ki te whakawhiti mai i tētehi moutere ki tētehi atu.”

⁵¹ he kupu nō te Taura Whiri I Te Reo Māori (66/T) mō te radar.

⁵² Tirohia te kōrero ‘Ngā Āwhina a te Mīhini Pākehā’, whārangi 93.

Te Arataki I Te Waka

He mahi nui tā te kaiwhakatere waka. Ko te tikanga, i te waka e rere ana, kāore kau he whakaaro ōna, atu i te arataki i te waka. Nā, kāore ia e pupuri i te hoe urungi o te waka, kāore ia e whakataka kai, kāore ia e mahi i ngā mahi a ngā kaumoana, kāore ia e moe mō te wā roa. Kotahi kē tōna whakaaro; kei whea kē te waka. Ki te ngaro i a ia kei whea te waka, akuni, ka mate te katoa. He mana nui tonu nō te kaiwhakatere i runga i te waka hourua.

He maha tonu ngā tohutohu ka tirohia e te kaiwhakatere. Ka tirohia ngā tohutohu a te rangi, ngā tohutohu a te moana, ngā mahi hoki a te waka. Hei tauira, ka āta titiro ngā kaiwhakatere waka ki te whitinga o te rā. Mehemea e māmā ana te pīataata mai, he tohu tērā kei te rere te tote i te rangi, nā te puhi te tote i whakarewa, nō reira he hau, he tūpuhi rānei e haere mai ana me te ua hoki pea. Mehemea e tahutahu rawa ana te whitinga o te rā, he tohu tērā kāore he tote i te rangi, kāore kau he hau e pupuhi ana i tawhiti, he rangi paki e haere mai ana.

Ka rahi ngā tohutohu i runga i te ara moana, otirā, i te mahi whakatere waka hourua e rua kē ngā tirohanga matua; pēwhea te tere o te waka, tuatahi; tuarua, e aro ana te waka ki whea. Ki te mau i te kaiwhakatere ēnei kitenga e kore rawa ia e ngaro. Nā tōna mōhiotanga ki te tere me te aronga o te waka mai i te tīmatanga ka taea e ia te kī, kua haere te waka i whea, kei whea te waka inaiānei, ā, me rere ki whea kia tae atu ai ki te ūnga e hiahiatia ana.

Te Tere O Te Waka

Mā te titiro ki ngā muriwai ki muri i te waka, mā te titiro hoki ki ngā huka e hipa ana i te waka, e mōhio ai te kaiwhakatere waka e pēwhea ana te tere o te waka. Kotahi anake te huarahi kia wāia ai te kaiwhakatere waka ki tēnei āhuetanga, ko te rahi o āna rerenga waka hourua. Ko ngā kaumoana e tautōhito ana ki te moana ka taea te titiro te wai e hipa ana, te wai e kōriporipo ana i muri o te waka me te kī, "e rima noti tā mātou tere i tēnei wā".

Mehemea kāore i te kaiwhakaterere tērā āheitanga, he huarahi anō kia ako ai i te tere o te waka. Ka āta tirohia e ia te huka i runga i te karetai. Ka kite ia i te huka i te ihu o te waka, ka tīmata te tatau i ngā hekene. Ka hipa te huka i te kei o te waka ka mutu te tatau. Whakawehea te rua tekau mā rua ki te tatau, koia hoki te tere o te waka i ngā noti. Nō reira, ko te tere = 22 / tatau.⁵³ Ka pēnei;

- | | |
|----------------------------|---------------------------|
| - ko te 2 hekene te tatau | - ko te 11 noti te tere |
| - ko te 4 hekene te tatau | - ko te 5.5 noti te tere |
| - ko te 8 hekene te tatau | - ko te 2.75 noti te tere |
| - ko te 15 hekene te tatau | - ko te 1.5 noti te tere |
| - ko te 22 hekene te tatau | - ko te 1 noti te tere. |

Te Aronga O Te Waka

Ko te tirohanga nui tuarua, ko te aronga o te waka. E toru ngā reanga i te moana nui e whakaatu ana kei whea te waka e aro ana;

- ko tā Ranginui; ko te rā, ko te marama, ko ngā whetū, ko ngā whetū ao, otirā ko te Whānau Mārama whānui e whiti mai ana, e tō atu ana
- ko tā Tangaroa; arā, ko ngā tohutohu o te moana
- ko tā Tāwhiri-mātea; he kōrero i runga i ōna whakahā ka pā ki te waka

Te Ārahi o Te Whānau Mārama

Ka rahi hoki ngā tohutohu a te Whānau Mārama. He whakaaturanga i ngā wā, i ngā āhukatanga o te rā, i ngā taupeka o te tau, i te aronga o te waka, i te tawhiti hoki kua haere te waka whakarunga, whakararo rānei.

Ki te āta noho te tangata ki te mātakitaki i te Whānau Mārama ka kitea ētehi ōritetanga. Ko te katoa ka hāpai ake i te taha Whitinga, ka tāwhana i te rangi, ka rehurehu atu ki te taha Tomokanga. Ka pērā a Tamanui-te-rā, ka pērā hoki te marama, ka pērā hoki ngā whetū me ngā whetū ao (arā, he ao ātea). Heoti, he āhukatanga tō te rerenga a tētehi, he āhukatanga anō tō te rerenga a tētehi atu.

Ki te matatau te kaiwhakaterere ki aua rerenga nā, ki ngā whare e whiti mai ai, e tō atu ai hoki, ā, inā ka kite ia i tētehi o te Whānau Mārama ka taea e ia te

⁵³ Ka ara ake te nama 22 nā te tawhiti i te ihu ki te kei.

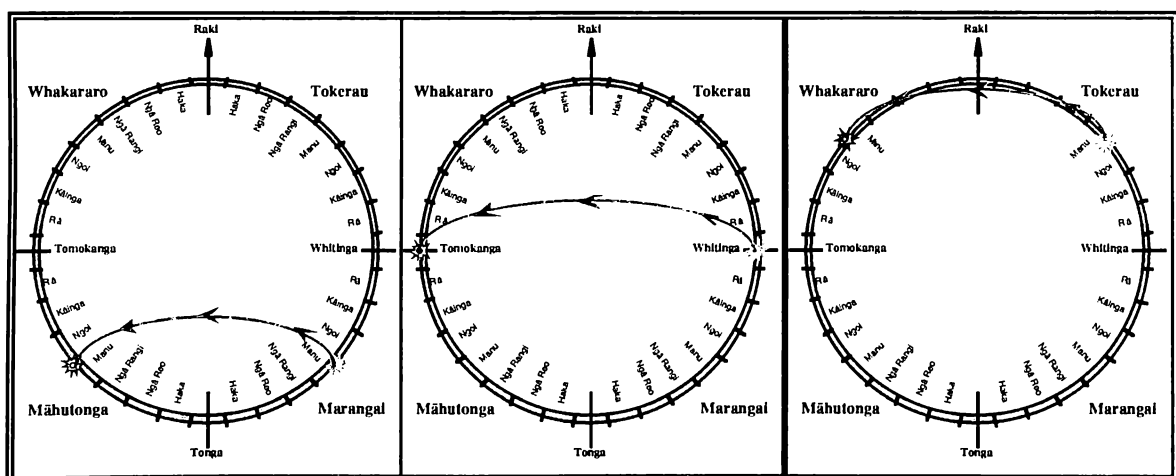
mōhio kei whea te Raki, kei whea te Tonga, kei whea hoki ngā wehewehenga pae kei waenga.

Tamanui-te-Rā

I te awatea ko Tamanui-te-Rā te kaitohutohu nui i runga i te moana. Nā te tirohanga ki te rā ka mōhio he aha te wā. Nā te tirohanga ki te rā i tāna whitinga mai, i tāna tōnga hoki ka mōhio he aha ngā āhuatanga o te rangi kei te haere mai. Nā te tirohanga ki te rā ka mōhio hoki he aha te aronga o te waka. Hei te Āpitianga IV ngā rerenga a te rā i te katoa o te tau, 1995.

I te raumati ka ara ake a Tamanui-te-Rā i ngā whare kei te taha Marangai o Whitinga, ā, ka rere atu ki ngā whare kei te taha Mahutonga o Tomokanga, pēnā i te *Whakaahua 13*. I te takurua ka ara ake ia i ngā whare kei te taha Tokerau o Whitinga, ā, ka rere atu ki ngā whare kei te taha Whakararo o Tomokanga, pēnā i te *Whakaahua 15*. Koia nei hoki te take o te makariri i taua wā, kua ngaro atu a Tamanui-te-Rā ki te Raki. Ka pērā te rerenga o te rā i ia tau, i ia tau, ka nuku atu i te Tonga ki te Raki, ā, ka hoki mai anō.

E ai ki ngā kōrero a Kui mā, a Koro mā, e rua ngā wāhine a Tamanui-te-Rā, ko Hine-Raumati, ko Hine-Takurua. He wā ka noho a Tamanui-te-Rā i a Hine-Raumati, he wā anō ka noho ia i a Hine-Takurua. ¹



Whakaahua 13: Raumati Whakaahua 14: Ngahuru/Kōhanga Whakaahua 15: Takurua

¹ Nā Best 1922, 18, Nā Kāretu, (1993), whārangi 21.

I te nuinga o te wā ka rere a Tamanui-te-Rā i waenganui i te *Whakaahua 13* me te *Whakaahua 15*. E rua noa iho ngā wā ka whiti tūturu mai a Tamanui-te-Rā i te Whitinga me te tōnga tūturu atu ki te Tomokanga, arā, ko te wā waenganui ngahuru me te wā waenganui kōhanga (pērā i te *Whakaahua 14*).

Ka mōhio rawa ngā kaiwhakaterere waka ki tēnei āhuetanga o Tamanui-te-Rā. Ahakoa ko tēwhea wā o te tau, ka mōhio hoki rātou ka whiti mai te rā i tēwhea whare, ā, ka rere atu ki tēwhea. Inā ka kitea te rā ka taea e rātou te kī pēnei, "Arā te rā e tō atu ana. Ko te taupeka Whiringa-ā-rangi tēnei, ka torengi te rā ki te whare o Ngoi i Mahutonga. Kei te whare o Kāinga i Mahutonga kē te huarahi mā te waka e takihi, nō reira, me aro te waka ki te taha katau o te rā."

"Kei whea te uru o te waka, e Kupe?" Ka mea a Kupe, "Waiho i te taha katau o te rā, o te marama, o Kōpú rere ai. Engari hei te ōrongo-nui haere ai ; ko te kaupeka o te tau, ko Tatau-uru-roa" ⁵⁵ ⁵⁶

Tekau mā whā ngā hāora o te awatea i te raumati. E toru, e whā rānei ngā haora kāore e taea te ārahina e Tamanui-te-Rā nā tōna poupoutanga. Heoi anō, nuku atu ki te tekau o ngā hāora ka noho tēnei he kaiārahi pai. Me te mea hoki, inā ka araitia mai e te kapua, i ētehi wā, ka taea tonutia te kitea.

Te Marama

He pōrori te rerenga a te marama. E rua tekau mā rima ngā hāora kia amio te marama i te ao. Ki te whiti mai ia i te iwa karaka i tētehi ata, ka whiti i te tekau karaka i te ata e whai mai ana, ā, ko te tekau mā tahi karaka i te ata i muri mai. Hei te Āpitihianga IV ngā rerenga a te marama i te katoa o te tau, 1995.

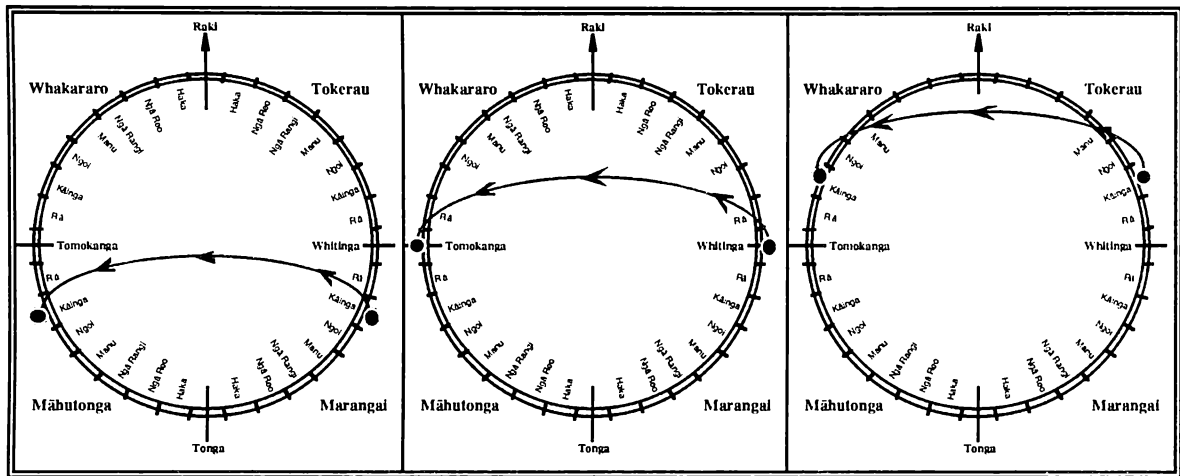
Ko tā te marama rerenga he whai i tōna tuakana, i a Tamanui-te-Rā. Heoi, he kakama ake te rerenga o te rā ki tā te marama : ka whakatata mai te rā ki te marama, ka hipa, ā, ka ngaro noa te rā: ka whakatata mai anō, ka hipa, ā, ka ngaro noa atu. Ko Whiro te pō ka hipa te rā i te marama. Ka hipa ngā toru

⁵⁵ Matorohanga, (1913) JPS 22 whār. 115.

⁵⁶ Koia nei te wā e pai ana te rangi mō te whakawhitinga ki Aotearoa.

tekau pō, ko Whiro anō, ā, ka hipa anō te rā i te marama. E ai kī ngā kōrero tawhito, hei teina te marama ki te rā.¹ Nō konā, ka whakatata mai te rā ki tōna teina, ā, ka whakaiti te teina i a ia anō, ka roku te marama. Ka wehe atu te rā i te marama, ka hua te marama, ka tae ki te mutunga atu o te tawhiti, kua āhuatia, koinā te pō Orākaunui.

Ki te tuku te marama anake hei ārahi i te waka me āta mōhio ki te āhua o tāna rerenga. Tekau mā rima ngā pō, mai i te pō Whiro, i te marama kōwhiti, ki te pō rākaunui, ki te marama tīahoaho. Engari ia, tekau mā toru kē ngā pō mō te rerenga a te marama i te Tonga (*Whakaahua 16*) ki te Raki (*Whakaahua 18*). Nō reira, i ētehi wā ka whiti mai te marama hua i te whare o Kāinga i Tokerau, i ētehi wā i te Whitinga, i ētehi wā i te whare o Kāinga i Marangai.



Whakaahua 16: Pō 1

Whakaahua 17: Pō 6-7

Whakaahua 18: Pō 13-14

Kia mōhio ai ko tēwhea te whare ka whanake mai ai te marama (arā, he aha te aronga o te marama) me āta mātakitaki i āna rerenga mō te wā roa. Hāunga i tēnā, ka whakarārangitia te rerenga a te marama ki te rerenga a tētehi atu i te rangi, pērā i te rerenga a Tamanui-te-Rā, pērā hoki i te rerenga a ngā whetū. Hei taurira, ki te puta mai te marama i te taha tonu o te whetū o Poutū-te-Rangi, ā, i te mōhio te kaiwhakatere i ara ake a Poutū-te-Rangi i te whare o Rā i Tokerau, nā, i taua pō hoki, ka ara ake te marama i te whare o Rā i Tokerau.

Ko te mea pai o te marama, ko te āheitanga kia kite ai i ētehi wā o te awatea.

¹ Best 1922, whārangi 24-25.

Ngā Whetū

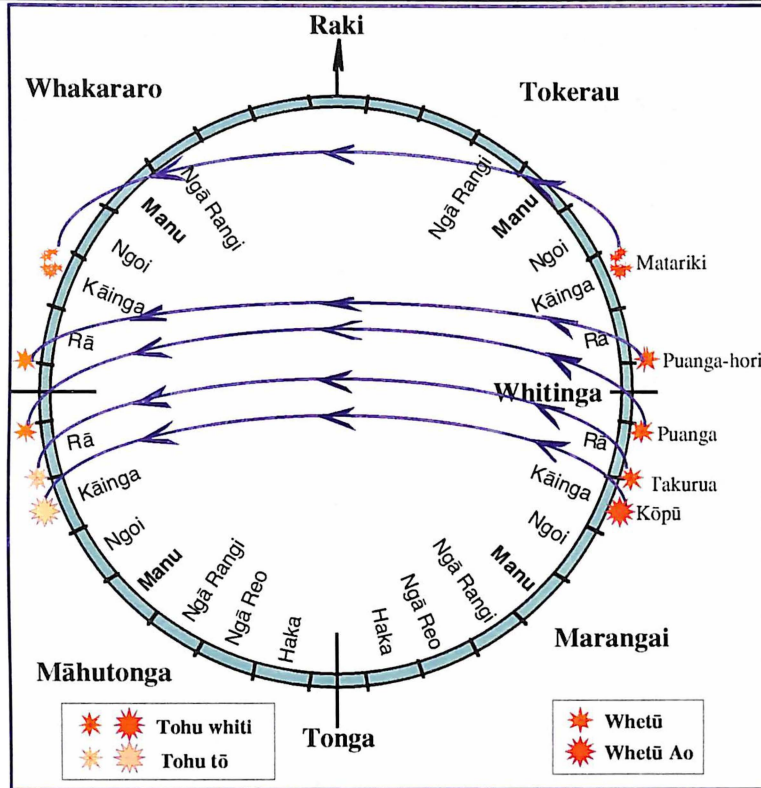
I ngā pō e tīhore ana te rangi, ka nui tonu te ārahi a ngā whetū. Mehemea ka rata te tangata ki ngā tātai whetū e kore rawa e ngaro, ahakoa i te moana, i te whenua rānei. Hei te Āpitianga III ngā whetu nui ka āta kimihia e te kaiwhakaterere waka, ā, hei te Āpitianga IV ngā rerenga a ētehi whetū i te katoa a te tau, 1995.

Ko tētehi mea pai o ngā whetū kāore kau he kōtiti i tā rātou rerenga. Ka whiti mai i tētehi whare i te taha Whitinga, ā, ka tō atu ki taua whare i te taha Tomokanga. Ka ākongia aua rerenga, ā, ka ngāwari noa te whakahāngaitanga o te waka ki tētehi whetū kua tauhōkaitia. Ka taea te whakarārangi i te waka mā ngā whetū e hāpai ake ana, e rehurehu iho ana hoki. Ka taea hoki te whakatikatika i te aronga waka mā ngā whetū kei mua i te waka, mā ngā whetū kei muri i te waka, mā ngā whetū hoki kei ngā taha. Nā, ka rahi tonu te whānau nei e arataki ana i te waka hourua.

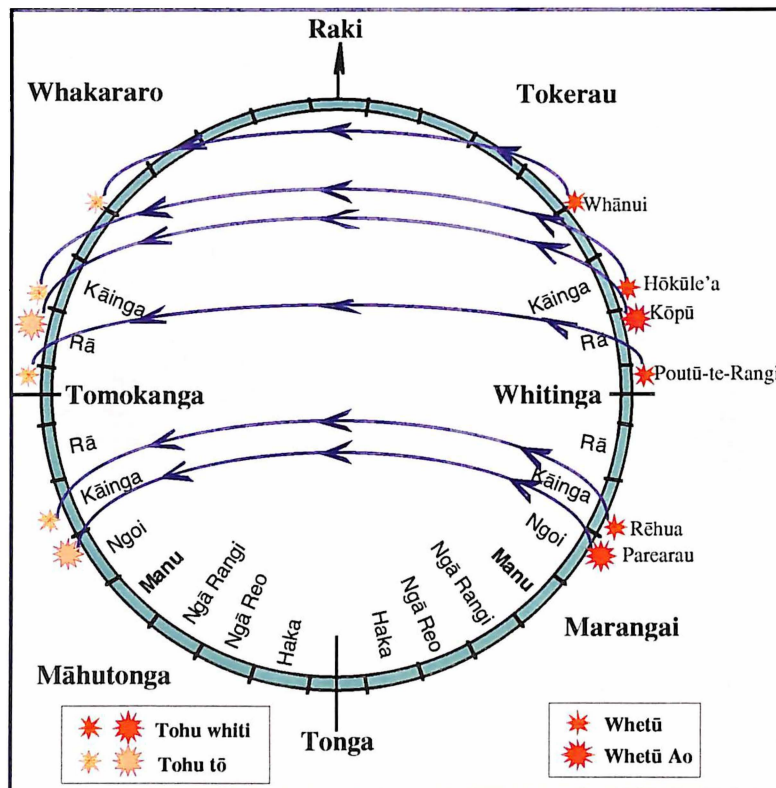
Ko ētehi o ngā whetū ka rere i te raumati, ko ētehi ka rere i te takurua. Nā te kitenga tuatahi i ngā ata i ētehi whetū ka tohutohu atu i ngā kaupeka o te tau. Hei tauira: ko te wā tuatahi ka kitea a Matariki, kua tau hou, ko te wā tuatahi ka kitea a Takurua, kua takurua.⁵⁸ Kei te *Whakaahua 19* ētehi whetū me ētehi whetū ao e rere nei i ngā pō raumati. Kei te *Whakaahua 20* ētehi whetū me ētehi whetū ao e rere nei i ngā pō takurua.

Kua titoa te *Whakaahua 19* me te *Whakaahua 20* me he rerenga a te waka i te kōpae waenganui o te ao. Mehemea ka rere te waka i te takiwā o Hawai'i ka paku nuku ki te Raki te pae i whakawhiti mai, whakatō atu ngā whetū. Mehemea ka rere te waka i te takiwā o Aotearoa ka paku nuku ki te Tonga te pae i whakawhiti mai, whakatō atu ngā whetū.

⁵⁸ Ahakoa ka tohutohu mai a Takurua i te wā takurua, ka noho tēnei whetū i te *Whakaahua 14* kē, nā te mea ko te nuinga o tāna rerenga ka takahia i te wā raumati.



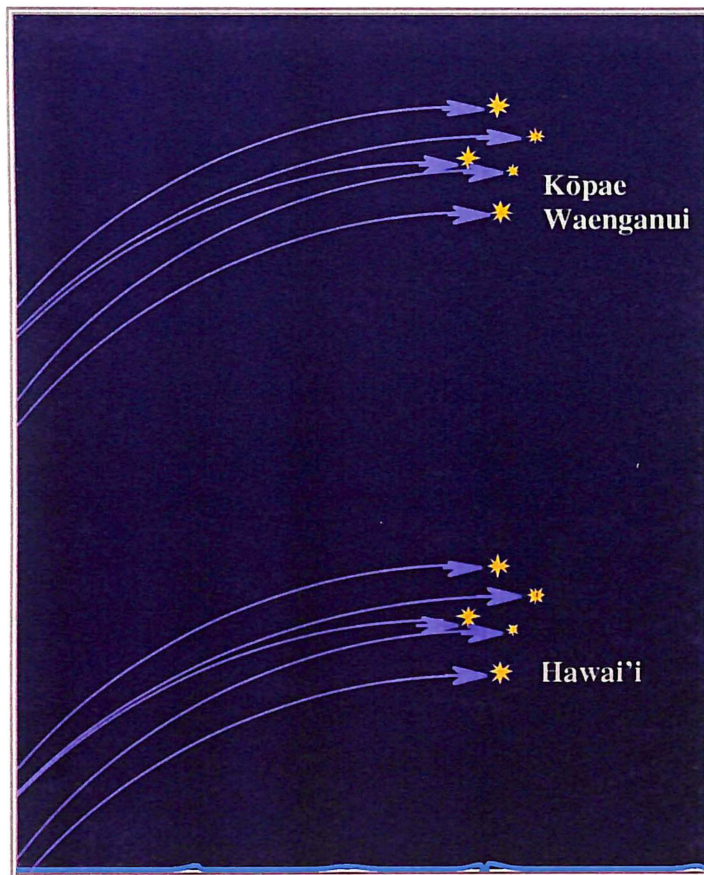
Whakaahua 19: Rerenga Whetū i te Raumati



Whakaahua 20: Rerenga Whetū i te Takurua

Ko tētehi atu āhuatanga whetū i rerekē i ngā takiwā ko te teitei o te rerenga.

Ko Mahutonga te kāhui whetū i te *Whakaahua 21* nei, ā, he tirohanga tōtika tēnei ki te Tonga. Mehemea kei te rere te waka i te takiwā e tata ana ki kōpae waenganui ao, ko te teitei o te rerenga a Mahutonga e pērā ana i ngā whetū i runga i te *Whakaahua 21*. Mehemea kei te rere te waka i te takiwā e tata ana ki Hawai'i, ko te teitei o te rerenga a Mahutonga e pērā ana i ngā whetū i raro i te *Whakaahua 21* nei. Mena ko te teitei o te rerenga nei he mea waenganui i ngā teiteitanga e rua, ka mōhio, e rere ana te waka i waenganui i aua takiwā e rua.



Whakaahua 21: *Te Rerenga a Mahutonga*

Ka pēnā ngā whetū inā ka titiro tōtika ki te pae Tonga, ki te pae Raki rānei.¹ Nō reira, e rua ngā tohutohu nui tā ngā whetū. Tuatahi ko te aronga o te waka. Tuarua, ko te tawhiti kua nuku ki te Tonga, ki te Raki rānei.²

¹ Me aro ki te pae Tonga kia kite ai i ētehi whetū, me aro ki te pae Raki kia kite ai i ētehi atu whetū.

² E ai ki tā te Pākehā he whakaaturanga 'latitude' tēnei.

Ngā Whetū Ao

He whānau anō ka kōkiri i te rangi, ko tō rātou āhua he whetū engari he whetū ao kē. Ko ētehi o ngā whetū ao he kaha ake te tīramarama mai ki tā ngā whetū. Ko te rerenga a ngā whetū ao he āhua ōrite ki tā ngā whetū, engari ka kōkiri haere ngā whetū ao ki waenganui i ngā whetū. Kāore he tere nō taua kōkiri haere, he mea uaua hei kite i roto i te wiki, engari i roto i te marama pea ka taea te waitohu, āe, i kōkiri te whetū ao i tētehi takiwā o te rangi ki tētehi atu.

Ko Kōpū te whetū ao rongonui. Hāunga i te rā me te marama ko tēnei te tīaho kaha i te rangi. Ka taki rere a Kōpū rāua ko Tamanui-te-Rā, kāore i tawhiti atu tētehi i tētehi. I ētehi wā ka rere a Kōpū ki mua i a Tamanui-te-Rā, koia nei te whetū (ao) kaha rawa ka kitea i te tākiritanga o te ata. I ētehi wā ka rere a Kōpū ki muri i a Tamanui-te-Rā, koia nei te whetū (ao) ka kitea i te maruahiahi, ā, ka tapaina ko Meremere, ko Mere-tūahiahi rānei.

Nā tōna tīahoaho mai he kaiārahi pai a Kōpū ki te whakatere i te waka, heoi anō, me āta mōhio kei tēwhea takiwā o te rangi a Kōpū e rere ana i te wā ka haere te waka. I te raumati o te tau 1995 kei te rere a Kōpū i te whare o Kāinga i te Tonga, pērā i te *Whakaahua 19*. Engari i te takurua o taua tau tonu ka rere a Kōpū i te whare o Rā i te Raki, pērā ki te *Whakaahua 20*. Nā ka kitea, he whāinga tērā i te rerenga a Tamanui-te-Rā, nā te mea, i te raumati ka rere a Tamanui-te-Rā i ngā whare i te Tonga, ā, i te takurua ka rere a Tamanui-te-Rā i ngā whare i te Raki.

Ka pēnei te rerenga a ngā whetū ao, i ētehi wā ka whiti mai i ngā whare i te Tonga, i ētehi atu wā ka whiti mai i ngā whare i te Raki. Mā ngā whetū maha tonu o te rangi e āta tohutohu mai, kei whea kē te whetū ao i te wā ka tere te waka. Ka kitea e te kaiwhakatere kei whea kē ngā whetū ao, ka whakarārangitia ki tētehi whare, (ki tētehi pae) kātahi ka riro mā aua whetū ao hoki te waka e ārahi.

Te Ārahi o Tangaroa

Ko te rongō me te titiro ki ngā amotai te tohu matua tuarua. Mehemea ka taurite te hau mō te wā roa, ka raupapahia ngā ngaru. Ka mehemea haere ngā hau engari ka taki haere tonu ngā ngaru mō te wā roa.

E wāia ana ngā kaumoana tautōhito ki te titiro ki ngā piki me ngā heke o ngā ngaru me te whāki atu ko tēwhea te amotai nō te Whitinga, ko tēwhea te amotai nō te Tonga, ko tēwhea te amotai nō te whare Manu i Tokerau. Ehara i te mea māmā kia kitea engari mehemea ka roa tāu mataara, ka maha rānei āu noho i runga i te moana ka mārama mai ētehi ritenga ngaru.

He tohu āwhina ēnei i te aronga o te waka. Hāunga i te tirohanga, i ētehi wā he ngāwari te rongō i ngā amotai nā te mānukanuka o te waka hourua. Kei te *Whakaahua 30* me te *Whakaahua 31* (whārangi 74) ngā taura i te piki me te heke o te waka hourua.

I ētehi wā he uaua te kimi aronga nā ngā amotai ngaru anake, nā te mea, he amotai i rere mai ai i te whare Manu i Tokerau, he amotai anō i te Whitinga, he amotai anō i te whare Manu i Marangai, he amotai anō i te Raki. Ko ētehi he āhua nui, ko ētehi he āhua iti, ā, e rere ana te katoa i te wā kotahi. I ēnei wā mā ngā kaumoana e wāia ana ki te moana nei e arataki i te waka.

I ētehi wā hoki kāore kau he ngaru. Ki te kore he ngaru ka kore he hau. Ki te kore he hau ka kore he haere. Ki te kore he haere ka kore noa te āwangawanga mō te aronga o te waka.

Te Ārahi o Tāwhiri-mātea

Ko te arataki mai o ngā hau me ngā puhi te tohu matua tuatoru hei ārahi i te waka hourua. Heoi, he mea tūpato tēnei tohu. I te nuinga o te wā ki te pā mai te hā o Tāwhiri-mātea, ka pā mai nō te whare kotahi (arā, nō te aronga kotahi). Engari ia, i ētehi wā, nō te whare o Manu i Marangai ka tīmata te puhi mai, ka huri ki te whare o Ngā Rangi i Marangai, ka hoki atu anō ki te whare o Ngoi i Marangai pupuhi mai ai. Ki te whai te aronga o te waka i te hau i aua wā ka

pakoke haere te waka.

Mehemea kāore he tohu mai nō te Whānau Mārama, kāore he tohu mai nō ngā amotai, me titiro ki te hau, inā e torotika ana te pupuhi mai. Ka herengia he puhi ariki ki ngā taura whakaara me ngā taura kutikuti. Ka urungia te waka e pā ana ki te rerenga o aua puhi ariki me ngā āhuatanga o ngā rā, āe rānei kua kī te rā i te ringa kaha o Tāwhiri-mātea, āe rānei kei te piupiu noa ngā rā. Nō reira, he wā, mā te kōrero o te waka e ārahi atu.

I ētehi wā he uaua te kimi aronga nā ngā whanonga o Tāwhiri-mātea. Ki te kore he tohu e whakaatu ana ki whea te waka e aro ana, ka whakatū te waka, ka whanga ki te wā ka puta mai anō ngā tohutohu.

Te Rapu Whenua

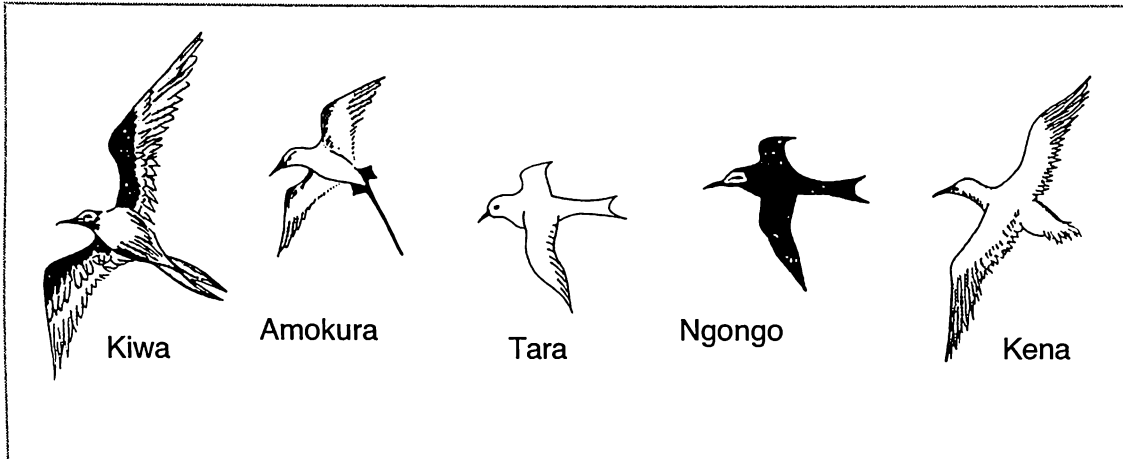
Ka nui te Moananui-ā-Kiwa, ka pakupaku ngā moutere. Ko ētehi moutere, ki te nui ake te tawhiti i te iwa maera, tē taea te kite-ā-karu. Ka mōhio te kaiwhakaterere kei te whakatata atu ki te whenua nā tāna tatau i te haerenga kua hoea, nā ngā tohu i runga i te rangi, nā ngā tohu hoki i runga i te moana.

Ko te tatau nei he mea whakatōpū i te tere o te waka me te aronga o te waka mō te katoa o te haerenga. I mua rā he mahi-ā-hinengaro, i ēnei rā mā te pene, te pepa, me te mahi whika e whakatōpū. Taiho ake ki te Ūpoko IV ka titiro ki aua tatauranga.

Ko ngā tohu o te moana e kī ana kei te whakatata ki te whenua, ko ngā paruparu whenua ki rō wai (pērā i te poro rākau, i te tarutaru), ko ngā ika ka hopungia (arā, ngā ika nō te wai pāpaku), ko te rerengakētanga o te tae o te moana (i ētehi wā he hīnātore ki roto i te wai), ko te rerenga kētanga hoki o ngā amotai (he mea whakaata i te whenua). Ko aua tohu he whakamōhio mai he whenua e tata ana. Ko te tohu o ngā amotai anake e kī ana kei whea kē te whenua.

Ko ngā tohu o te rangi, ko te rā, inā ka tō te rā ki muri i te whenua, ahakoa e kore tonu te whenua e kitea, ka kitea he rerekē nō te tōnga o te rā. Tuarua ko

ngā kapua. He rerekē te tae, te hanga me te rere a ngā kapua o te whenua ki tā ngā kapua o te moana. Nō reira, ka kitea he kapua nō te whenua ka mōhio he whenua ki raro i taua kapua. Tuatoru, ko ngā manu.



Whakaahua 22: Ētehi Manu nō te Moana⁶¹

Ko ētehi o ngā manu ka moe i runga i te moana, ko ētehi ka hoki atu ki te whenua moe ai. Ko ngā mea pai hei tohutohu atu i te whenua ko ngā manu pango rā, arā, ko ngā Ngongo. Ka hī-ika rātou i ētehi wā, ka huihui te rōpū tokowaru pea, ka noho i runga i te moana whakangā ai, kātahi ka hoki atu ki te mahi hī-ika. Kāore rātou i tawhiti rawa i te whenua i a rātou e kimi ika ana. Iti ake i te 80-60 maera te tawhiti ka rere ai. Nā te kitenga o ēnei manu ka mōhio e pēnā ana te tawhiti i te whenua.

Ko te Kena, tae atu ki te 300 maera te tawhiti e āhei ana ki te wehe i te whenua.

Ko tā te Kiwa, he topatopa i runga rawa i ngā manu hī-ika rā. Kāore te Kiwa e mōhio ana ki te ruku moana, ki te hī-ika rānei. Ko tāna he whanga i runga rawa kia hopungia e te Tara, e te Ngongo rānei tētehi ika, kātahi ia ka tirihou ki raro kia whānakohia ai taua ika. He manu nō te whenua a Kiwa mā, heoi, i ētehi wā ka moe rātou i a rātou e pōteretere ana. Nā konā ka tawhiti atu rātou i te whenua.

Ka ara ake te rā, ka wehe ngā manu i ō rātou kāinga, i te whenua, ka kimikimi i

⁶¹ Ko ngā whakaahua manu nei ka tiki mai i te pukapuka a Lewis, "We, the Navigators" (1972). Ko ngā ingoa Kiwa, Kena me te Ngongo he mea tiki mai i te kōnae rorohiko o Biggs (1995)

ngā huihuinga ika. Ka tō te rā ka hokihoki atu rātou ki ō rātou kāinga, arā, ki te whenua. Mā ngā manu rā e tohu atu kei whea kē te whenua. Nō reira, kia tae ai ki te moutere, me whai atu i ngā manu i te ahiahi rikoriko, me titiro rānei, te aronga i haere mai ngā manu i te hāpara o te ata.

He Whakarāpopoto

Kua whakatakotohia he huarahi hei whakaterere i te waka hourua i runga i te moana nui. Kua kīia, e toru nga wāhanga whānui. Ko te whakarite i te huarahi, ko te arataki i te waka, ko te rapu i te whenua. Ki te ngaro tētehi wāhanga ka raruraru te waka hourua me ngā kaumoana. Ki te whakatūtuki aua wāhanga e toru ka tae ora ai ki te ūnga e hiahiatia ana. Me kī, “ka waewae kai kapua ai te waka hourua.”

Kua kitea he maha ngā tohutohu o te rangi, o te moana hoki hei ārahi i te kaiwhakaterere waka i tāna mahi. Ki te tūturu āna pupuri i ngā akoranga, ki te torotika āna tirohanga ki ngā tohutohu, e kore rawa ia e ngaro.

He māmā noa ki te whiu i ēnei kupu, arā noa atu te whakatinanatanga.

Koirā kē te Ūpoko IV e whai mai ana.



Ūpoko IV: He Moana Pukepuke

He Whakamārama

Ko tā te ūpoko i muri tata mai, ko ngā tikanga a te mahi whakaterere waka hourua i runga i te moana nui. Ko tā tēnei ūpoko, ko ngā mahi-ā-ringa o te whakaterere waka hourua i runga i te moana nui. He tirohanga nei ki ngā kōkiritanga i whakatinana ai te kōrero ...

"He moana pukepuke e ekengia e te waka."

Ko te moana pukepuke ko te Moananui-ā-Kiwa, mai i Hawai'i, whakawhiti atu ki Rarotonga. Ko te waka, ko Te Aurere.

I wehe te waka a Te Aurere me tētehi poti tautoko i Honolulu, i te 1 o Pipiri, i te tau 1995. Ka ū rawa atu ai ki Rarotonga i te 30 o Pipiri. E rua tekau mā iwa ngā rā i te moana nui, kāore te whenua i kitea. Ka whakamātau ngā kaumoana kia mahi tūturu katoatia ai ngā mahi. I roto i ngā whārangi e whai mai ana ka āta tātaritia ngā mahi whakaterere waka i tae ora atu ai a Te Aurere ki tōna ūnga.

I te Ūpoko III i kitea e toru ngā wāhanga whānui o te mahi whakawhiti moana, ā, ka āhua whēnā anō ngā wehewehenga o te Ūpoko IV nei.

Tuatahi, ko te whakarite i te huarahi. Ka tirohia te ara moana i whakarite. Ka kōrerohia ngā wāhanga o taua ara moana me ngā māharahara nui hei whakatūpato mā runga i taua ara moana. Ka whakaingoatia ngā kaumoana kua whiriwhiringia me te poti tautoko kua whakatūngia hei haere ngātahi mai. Ka kōrerotia hoki ngā herenga me ngā taputapu Pākehā i runga i te waka.

Tuarua, ko te arataki i te waka. Me kī, koia nei te matū o te tuhinga roa nei. Ka āta tirohia ngā wāhi i rere ai te waka hourua a Te Aurere i tāna haerenga i Hawai'i ki Rarotonga. Ka whakaputangia ngā āhuatanga i aua wāhi me ētehi whakaaro i aua wā. Ka āta tirohia ngā huarahi i aratakina mai mā te Whānau Mārama, mā Tangaroa me ōna wāhanga katoa, mā Tāwhiri-mātea hoki. Ka

āta tirohia hoki ngā mahi tatau o te kaiwhakaterere waka i taea ai e ia te kī i rere te waka hourua nei mai i whea, atu ki whea.

Tuatoru, ko te rapu i te whenua. He kōrero tēnei mō te whakaotinga o te rerenga. Ka whakamāramahia ētehi māharahara i ngā rā whakamutunga me te āhuetanga o te ū rawa ki Rarotonga.

Ko ngā kōrero i te mutunga o te Ūpoko IV nei, he tirohanga whakamuri, he hokinga whakaaro, he whakarāpopototanga.

Te Whakarite Huarahi

Ko te pūtake o tēnei rerenga ko te hoki mai a Te Aurere ki Rarotonga. Kua oti ngā whakamātautau i ngā kaiwhakaterere waka, kua oti ngā pōwhiri me ngā hui whakanui i Hawai'i, kua tae ki te wā me huri te ihu, me aro atu ki ngā moutere i te Tonga.

Ka āta noho, ka āta titiro whakamua ki ngā āhuetanga o tēnei whakawhitinga. Ka whakaritea ngā pūtea. Ka whakaritea te waka. Ka whakaritea ngā kai me ngā taputapu. Ka whakaritea hoki ngā āhuetanga i te wā kāinga, kātahi ka tirohia te ara moana.

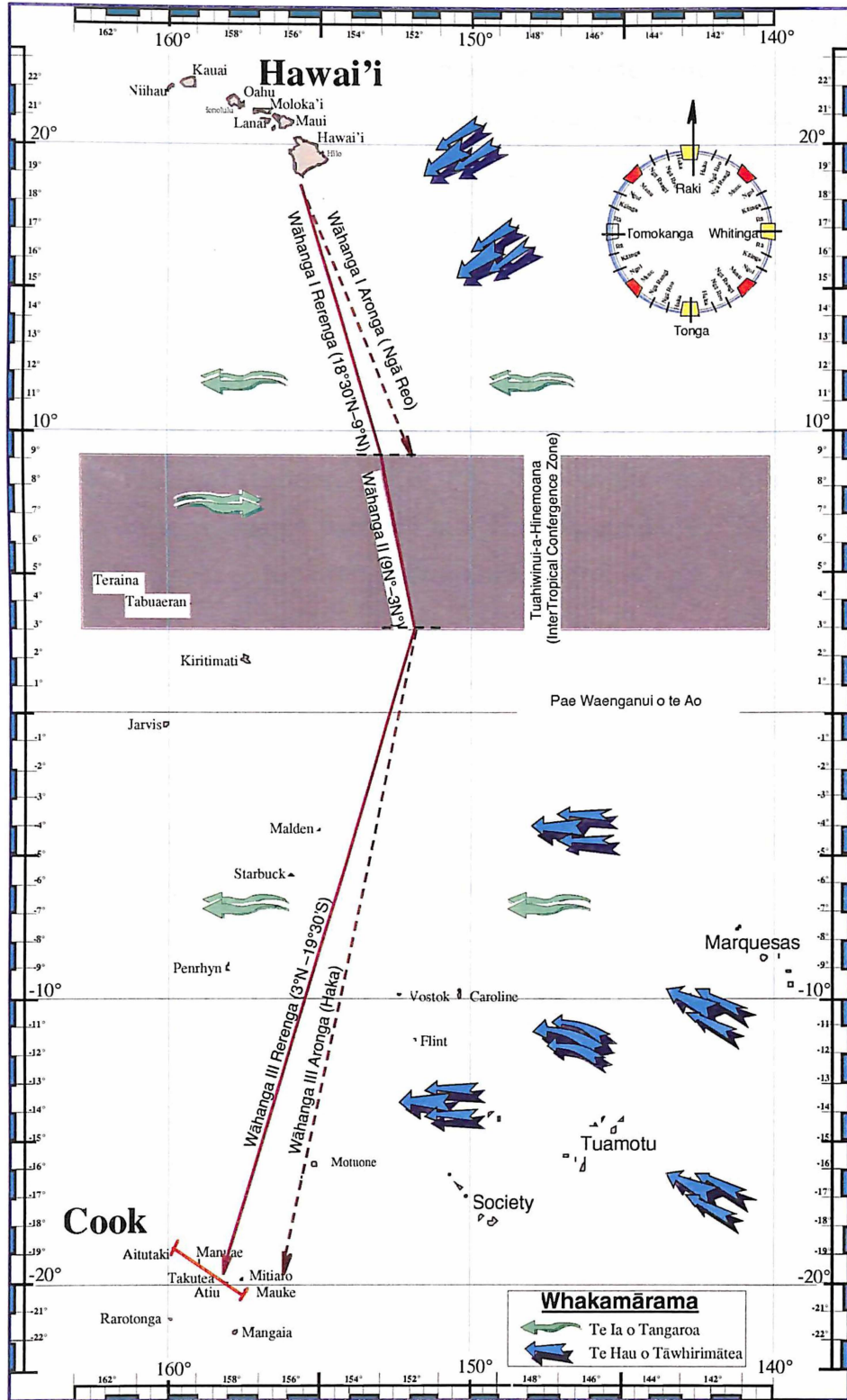
Ka whakaritea he ara moana hei whai mā te waka hourua. Ka tirohia ngā māharahara mā runga i taua ara, ka tirohia ngā kaumoana, ka whakaritea hoki tētehi poti tautoko. Ka whēnei hoki ngā wāhanga tuhituhi o tēnei ūpoko: ka tirohia te ara moana i whakaritea; ka tirohia ngā kaumoana; ngā māharahara; te poti tautoko; me ngā taputapu Pākehā hoki.

Te Ara Moana i Whakarite

I whakatauria kia wehe i te wā o Paenga-whāwhā/Pipiri, nā te mea, kua oti ngā hui i Hawai'i, kua whakaritea te waka, kua tae mai ngā kaumoana hou mō tēnei whakawhitinga a Te Aurere, ā, he wā ka tika te pupuhi mai o ngā hau mō te tere whakarunga.

Nā, ka āta tirohia ngā āhuetanga o Tāwhiri-mātea me ngā ia rere o Tangaroa mō te katoa o te haerenga. Ka whakaritengia e te kaiwhakaterere waka he ara moana hei whai. Ehara i te mea ka taea e te waka te rere tōtika mā runga i taua ara moana, e kāo. Kāore e ōrite ana ngā puhi o Tāwhiri-mātea i ngā wā katoa. Heoti, ko tō te tūmanako ka whai tata te waka ki taua ara moana.

Kei te *Whakaahua 23* te ara moana i whakaritea, kei reira hoki ngā āhuetanga o Tāwhiri-mātea rāua ko Tangaroa. Nā ngā whanonga o aua atua e rua ka rerekē te aronga o te waka hourua ki tā te rerenga a te waka hourua.



Whakaahua 23: Te Ara Moana I Whakaritea

Kāore e tika ana kia anga tōtika ai ki a Rarotonga kei pā mai te tūpuhi mā te

Whitinga, ā, ka ngaro rawa te waka i Tomokanga, i ngā moutere o Tonga tē taea te ahu atu ki Rarotonga. I tirohia ēnei momo āhuatanga kātahi ka whakaritea kia whā ngā wāhanga o te whakawhitinga ki Rarotonga.

Nā te rerekē o ngā hau e tāwhirowhiro ana i ngā moutere o Hawai'i, ka whakatauria kia tīmata ai te mahi whakaterere waka i tētehi wāhi whakaterunga o te motu nui o Hawai'i. Ki ngā whakawehenga ao o te Pākehā, ka tū taua takiwā i 18° 30' N, 155° 50' W.

Ko te wāhanga tuatahi o te whakawhitinga moana ka wehe i te takiwā whakaterunga i Hawai'i, ka aro ki te whare o Ngā Reo, ka tae ki te 9°N. He āhuatanga anō i runga i te moana kei te 9°N. Taihoa ake rā ka kōrero mō taua wāhi. Ka tīmata te wāhanga tuarua i te 9°N ka haere ki te 3°N. Ka aro ki te whare o Haka tae rawa ki te putanga i taua wāhi rerekē.

Ka whakarerea taua takiwā, ka ahu atu ki ngā Kuki Airani. I te wāhanga tuatoru ka aro ki waenganui o ngā moutere Aitutaki, Manuae, Takutea, Atiu, Mitaro me Mauke. Ko te whakaaro ka aro ki waenganui i aua motu kia pā ai ki tētehi ahakoa ko wai.

Ka ū ki tētehi o aua moutere, ka āta mōhio mātou kei whea mātou. Ka mōhio hoki me aro ki whea kia tae atu ai ki Rarotonga. Nō reira, ko te wāhanga tuawhā ko te rerenga i taua moutere ki Rarotonga whakaoti atu ai. Kāore te wāhanga tuawhā i tuhia ki te *Whakaahua 23* nei, nā te kore mōhio ka pae ki tēwhea o ngā moutere o te Kuki Airani.

Nō reira ka whēnei ngā wāhanga e whā:

Wāhanga I 18° 30'N - 9°N

te tawhiti	≈	620 m
te tere	≈	5 n (120m/rā)
te roa	≈	5 ngā rā, 4 hāora
te au moana	≈	12 m/rā Tomo.
	≈	62 m/wāhanga 1
te aronga	=	Ngā Reo -Mara.

Wāhanga II 9°N - 3°N

te tawhiti	≈	360 m
te tere	≈	5 n (120m/rā)
te roa	≈	3 ngā rā
te au moana	≈	kore (pea)
te aronga	=	Haka-Marangai

Wāhanga III 3°N - 19° 30'S

te tawhiti	≈	1350 m
te tere	≈	5 n (120m/rā)
te roa	≈	11 rā, 12 hāora
te au moana	≈	12 m/rā Tomo.
	≈	138m/wāhanga 3
te aronga	=	Haka-Mahutonga

Wāhanga IV 19° 30'S - 21° 14'S

te tawhiti	≈	150 m pea
te tere	≈	5 n (120m/rā)
te roa	≈	1 te rā, 6 hāora
te au moana	≈	12m/rā Tomo.
	≈	16m/wāhanga 4
te aronga	≈	??

Ko te tawhiti i te katoa o te haerenga e 2480 ngā maera. Heoi anō, he ariā noa iho te ara moana nei kua whakatakoto. Kāore mātou i te whakapono ka tika rawa te haere mā runga i taua ara, engari ka whakatata noa.

Ngā Māharahara

I te aweke ngā rangatira me te kaiwhakatere o Te Aurere ki ngā take nui e toru i mua i te wehenga. Tuatahi, ko te marama o Pipiri te marama e tipu ana ngā haumātakataka ki te takiwā o Hawai'i. Ko te tūmanako ka puta atu i taua takiwā i mua i te aranga ake o tētehi.

Tērā hoki tētehi wāhi rerekē kei te pae o waho. I te nuinga o te wā ka noho i te 3° North ki te 9° North, engari ka nuku ki runga, ka nuku ki raro, ka whānui haere, ka ngaro haere. E ai ki te Pākehā, ko te InterTropical Convergence Zone (ITCZ), arā, ko te doldrums. E ai ki te Māori pea, ko te tuarā o Hine-moana, arā, ko te Tuahiwi-nui-ā-Hinemoana.⁶² He takiwā takaro, he wāhi huihuinga o ngā tamariki a Tāwhiri-mātea.

Ko ngā āhuatanga i reira kāore i kitea i tētehi atu wāhi o te ao. Ka takimoana ngā tūpuhi, ka makihi noa ngā apū matangi, ka aewa iho ngā āwhā. Kāore he wāhi i te ao katoa, tua atu i tēnei, e tamaru ana te rangi. He kāpunipuni o ngā pūao, o ngā pūrehurehu, o ngā pōkēao hoki. Mehemea ka rongona te puhi he kōhengihengi noa.

Ka tae mai te waka hourua ki tēnei wāhi he uaua hei whakaputa, he uaua hoki te kitea ngā tohutohu e whakaatu ana kei whea te waka e aro ana. I tētehi haerenga a Hōkūle'a ka mau ki reira mō ngā rā tekau mā waru.⁶³ Otirā, ko te whakaputa i te Tuahiwi-nui-ā-Hinemoana te āwangawanga tuarua.

Ko te mānukanuka tuatoru, ko ngā Kuki Airani, te ūnga e rapangia ana e Te Aurere, he huinga o ngā moutere pakupaku noa. He ngāwari rawa te tere ki waenganui i ngā moutere me te hipa noa atu, ā, tē kitea tētehi. Ko te tūmanako kia kua e whērā, kia pā kē ki a Manue, ki a Takutea rānei, ki a Atiu rānei, ki a Mitiaro rānei, ki a wai rānei.

⁶² Ki te tirohia ngā kōrero a Mātorohanga i te JPS 22 1913, whārangi 110, 123 me te JPS 24, 1915 whārangi 2, 10 ka kitea ngā āhuatanga taurite.

⁶³ Nā Jack Thatcher i kōrero mai i a mātou e pōteretere ana i reira.

Ngā Kaumoana

Tekau mā rua ngā kaumoana i runga i tēnei whakawhitinga. Tokoiwa nō Aotearoa, kotahi nō Hawai'i, kotahi nō te Caroline Islands, kotahi nō Rapanui. He Māori te katoa. He tāne te katoa. Ehara i te mea kāore e whakaaetia ngā wāhine kia haere mai. Engari ia ko ngā kaumoana wāhine kua akongia te mahi hoe waka kāore i te wātea mō tēnei haerenga. Ka whēnei;

Heke Nukumai Puhipi	-- Rangatira
John (Jacko) Thatcher	-- Kaiwhakatere

Rōpū Mahi Tuatahi

Ke Ahi Omai	-- Kaiwhakahaere	* nō Hawai'i
Hector (Maurice) Busby	-- Kaumoana	
George (Hori) Murray	-- Kaumoana/Kūki	
Sesario Sewralur	-- Kaumoana	* nō Satawal
Carl Ahlers	-- Kaumoana	

Rōpū Mahi Tuarua

Tūrakuraku (Lux) Kereopa	-- Kaiwhakahaere	
Peter Rupapera	-- Kaumoana	
Carlos Atan	-- Kaumoana	* nō Rapanui
James (Hōri) Ahlers	-- Kaumoana	
Te Taka (Adrian) Keegan	-- Kaumoana/Reo Irirangi	

Nā Heke Nukumai te kaupapa waka hourua i whakahauora i Aotearoa nei. Nāna te waka a Te Aurere i tarai. Ko tētehi o ōna pūmanawa i tere kitea e au i waho, ko tāna tirohanga me tōna mātauranga ki ngā whanonga o te waka hourua. Ka noho iho ia ka mātakitakingia te rā matua, te rā tauaki, te rā ngongo-hau. Ka tirohia hoki te whena o ngā taura kutikuti, o ngā taura whakaara, o ngā waha me ngā waewae. Nāwai rā, ā, ka tū ia, ka whakatangatangatia ētehi aho, ka whakakikīa ētehi taura, ko te otinga atu ka piki te tere o te waka, ka ngāwari hoki te mahi urungi.

Ko tā Jacko, arā, tā te kaiwhakatere mahi, he mahi uaua. Ko tāna, he

whakatere i te waka hourua. He mahi tūturu, kāore he mīhini, he kāmupene, he wāti rānei hei āwhina i a ia. Ka mātakitaki ia kei whea te waka e haere ana i ngā wā katoa. Ki te kōtiti te aronga o te waka māna hei whakatikatika. Torutoru noa iho ngā hāora ka moe ia ia rā, ia rā.

Ko Ke Ahi te kaiwhakahaere o te rōpū tuatahi. Nō Hawai'i ia, he kaiwhakatere i runga i te waka o Hōkūle'a, nō reira, ka āwhina ia i te mahi a te kaiwhakatere i ētehi wā. He tautōhito hoki te kaiwhakahaere o te rōpū tuarua, a Lux, ki ngā rerenga moana o Te Aurere. He kaumoana hūmarie, he pou whirinaki o te waka nei.

Ko tēnei te whakawhitinga nui tuatahi mō ētehi o te tira pōkai moana nei, heoi anō, ko te nuinga kua tau kē ki ngā haerenga-ā-moana whēnei.

E rua ngā rōpū mahi, tētehi e mahi ana, tētehi e moe ana. Ka oti i te ono hāora ka whakawhiti ngā rōpū. Ka mahi mātou, ko te rōpū tuarua, i te whitinga mai o te rā ki te rā-nui, kātahi ka moe. Ka mahi anō mātou i te tōnga o te rā ki te waenganui pō, kātahi ka moe anō. I runga i tēnei āhuatanga kāore i tino mākona te moe. Heoi, i te mutunga kua waia te tinana ki ngā moe whēnei.

Te Poti Tautoko

Kia tiaki ai i a Te Aurere i whakarite kia rere ngātahi mai tētehi poti tautoko. Ko te whakaaro, mehemea ka pā mai te raruraru nui ki a Te Aurere, ka āwhinatia mai e te poti tautoko, ka kimihia rānei he āwhina. Ko te ingoa o te poti tautoko ko Potzalana. Tokotoru ngā kaumoana i runga, ko te katoa nō Amerika. Ko Joseph Dragovich te rangatira, nōna te poti. He mīhini hinu, he reo irirangi nunui, he GPS, he radar hoki i taua poti. I whakaritea kia kaua te poti tautoko e whakamārama mai i tētehi wāhi rere, i tētehi kōrero hoki, hāunga i te wā ka tata aituā mātou.

Ko te tikanga, ka tautoko te poti rā i a mātou inā ka tino raru mātou. I āhua whērā hoki i te tīmata, engari ka tae ki te mutunga ka tautokohia kētia te poti tautoko e te waka hourua.

Ngā Herenga Me Ngā Taputapu Pākehā

He rerekē ngā tikanga i te ao hou nei ki tā te ao kōwhatu tikanga. Ka rerekē ngā mahi i te ao hou nei ki tā te ao kōwhatu mahi. Ka rerekē hoki ngā herenga i te ao nei ki tā te ao kōwhatu herenga. Ko tētehi herenga nui i roto i te ao hou nei, ko te wā. He wā potopoto e āhei ana te waka ki te whakarere whenua, nā te utu me ngā herenga a ngā kaumoana ake mahi. I ngā wā o mua e āhei ana ngā kaumoana ki te whanga i ngā āhuetanga papai a Tāwhiri-mātea, kātahi ka puta ki te pae o waho. Nō reira, he terenga i roto i ngā āhuetanga rangimārie o runga i te rangi. I ēnei rā kotahi te wiki pea e taea te tatari, kātahi ka puta ki te moana, ahakoa e māriri ana a Tāwhiri-mātea, e aha atu ana rānei.

Ki ōku nei whakaaro e pai ana te tō a te waka ki waho i te whanga, tīmataria ai te whakawhitinga, ki roto rānei ki te whanga kia whakaotia ai te whakawhitinga. I ngā wā o mua ka whanga i ngā hau tika hei māwhiti i taua pae. He pōrangi noa te kōrero e kī ana, 'ka taea te waka hourua te whakawhiti i te moana e 2500 maera te tawhiti, engari e kore e taea te whakawhiti i ngā maera whakamutunga e 20 .' Ka taea te waka hourua te nuku haere i roto i te whanga engari me tatari kia tika te aro mai o Tāwhiri-mātea. I ēnei rā he māmā noa atu te tō i te waka hourua ki roto i te whanga ki te tatari ki ngā apū e tika ana te aro.

Koinā hoki te take he mīhini poti kei runga i te waka hourua a Te Aurere, arā, hei whakanukunuku i te waka ki roto i ngā tāwhangawhanga. He mea āwhina hoki ki te ara ake mai tētehi ākau i te moana nui. Mā runga i te whakawhitinga e 2500 maera te tawhiti, e kore e taea te mīhini poti me te 40 rita o ngā kōhinu⁶⁴ te whakarerekē i ngā āhuetanga o te haere.

⁶⁴ he kupu nō te Taura Whiri I Te Reo Māori (60/T) mō te *petrol*.

Tērā tētehi atu herenga, ko ngā ture a te Pākehā.⁶⁵ Nā aua ture i kī me kawē i ngā waka rauora, me kawē hoki i ngā reo irirangi. Kāore he tautohetohe i aua āhuetanga, he mea tiaki i te oranga o te tangata, ahakoa ka taea te whiu a te kupu, 'he Pākehā taputapu kua utaina'. I te whakawhitinga nei kāore kau he mahi tā ngā waka rauora, engari he mahi nui tā te reo irirangi.

Ko ngā pūtake nui i whakakāngia e mātou te reo irirangi e whēnei ana :

- kia kōrero ki te poti tautoko
- kia rongona mehemea he tūpuhi nui e whakatata mai ana
- kia āwhina atu, āwhina mai i ētehi atu waka hourua e tere ana i taua wā
- kia rongona ngā whakaritenga a te whenua i wehe me ngā whakaritenga a te whenua ka ū
- kia whakamōhio atu ki ō mātou kaitiaki me te hau kāinga, kei whea mātou, e pēwhea hoki ana mātou

Ko tētehi atu taputapu Pākehā i runga i te waka hourua a Te Aurere, ko te GPS. Nā māua ko Hekenukumai anake i titiro ki tēnā, ā, hāunga i ngā wāhi e rua kāore e kōrerohia ki te kaiwhakaterere waka. I ētehi wā kāore te GPS i runga i te waka hourua i taea te whakaputa i ngā wāhi rere nā te ngarotanga a ngā waka ātea. Nā reira, ko te nuinga o ngā wāhi rere i ngā Rārangi 1 ki te Rārangi 4, he mea kōrerotia mai e te poti tautoko.

Tērā tētehi wā ka ngaro mātou i te tirohanga a te poti tautoko. I te 17 o Pipiri, ka kaha pupuhi mai a Tāwhiri-mātea, ka nui te piki me te heke o ngā ngaru, ā, ka 6 noti te tere a Te Aurere. Kāore te poti tautoko e taea te tere whēnā i runga i aua āhuetanga, ā, ka ngaro mātou i a ia. Kotahi te pō e ngaro ana, ka awatea, ka kōrerorero i runga i te reo irirangi. Ka kimihia e au te wāhi rere a te GPS i runga i te waka a Te Aurere, ka kōrerohia atu ki te poti tautoko, ka tīmata te poti tautoko ki te rapu i a mātou. I taua ahiahi ka nohopuku a Te Aurere, kia whakatata mai ai te poti tautoko, ā, taro ake rā, ka kitea mātou e te poti tautoko. Ki te kore te waka hourua e mau ana i te GPS i taua wā, ka ngaro noa atu te poti tautoko i a mātou, tē taea tētehi te kimi i tētehi.

⁶⁵ kia utua ngā nama me inoi atu ki ngā kamupene nui, mō tētehi pūtea. Ka māmā ake te riro mai o aua pūtea ka whiwhi te waka i te *Class A Multi-Hull Rating*. I raro i ngā ture o tēnei *rating* me mau te waka i ngā waka houora, i ngā reo irirangi, i ngā rama hoki.

Hāunga te reo irirangi me te GPS he matawā i ahau. I whēnā au kia taea ai e au te whakatūtuki i ngā wā kōrerorero a te reo irirangi. Atu i taua mahi, kāore he take mō te matawā i runga i te moana. Ka ao, ka pō, ka ao, ka pō. Koia noa te āhuatanga. Ko te wā nui anake mā ngā kaumoana, ko te wā i whakawhiti ai ngā rōpū mahi. Nā te kaiwhakaterere tēnā i karanga, i runga tonu i tāna tirohanga ki a Tamanui-te-Rā, ki te Whānau Mārama rānei.

Nō reira, he taputapu Pākehā i runga i te waka hourua, engari mena kāore te kaiwhakaterere i kite, kāore e tōngia te waka, ko tāku e kī nei, 'he tikanga tawhito i whāia e Te Aurere kia whakawhiti mai ai i Hawai'i ki Rarotonga'.

Te Arataki I Te Waka

Ko te mahi nui a te whakatere waka hourua, ko te arataki waka i te wā e tere ana te waka. I tēnei wāhanga o te tuinga roa nei ka āta wānangangia te mahi whakatere waka hourua i mahitia i waenganui o Hawai'i me Rarotonga. E toru ngā tirohanga nui nei kia whakaatu ai i pēwhea a Te Aurere i wehe i Hawai'i, i whakawhiti i te Moananui-ā-Kiwa, ā, i ū ora tonu ai ki te moutere o Rarotonga.

Ko tā te tirohanga tuatahi, ko ngā rerenga a te waka rangatira nei. Ka āta kōrerohia ngā wāhi i rere ai e ai ki te kōrero a te kaiwhakatere waka ā, ka kōrerohia ngā wāhi i rere tūturu ai ki tā ngā tirohanga ki te GPS. E whā ngā whakaahua e whakaatu ana i aua rerenga. He kōrero hoki i ētehi āhuetanga, i ētehi whakaaro o ngā kaumoana i runga i te whakawhitinga nui o te moana pukepuke nei.

Ko tā te tirohanga tuarua, ko ngā tohutohu mai i ngā atua. Ka whakaatu i te arataki waka nā tā mātou tirohanga ki a Tamanui-te-Rā, ki ngā whetū, ki te marama, otirā, ki te whānau marama. Ka whakamāramahia ngā amotai me ngā tamariki a Tangaroa i aratakina mai. Ka kōrerohia hoki te āwhina mai a Tāwhiri-mātea i a mātou e rere ana i te pae o waho.

Ko tā te tirohanga tuatoru, ko ngā mahi tatau a te kaiwhakatere waka. Ka āta tirohia, he aha ia i mahi whika ai, pēwhea te āhua o tāna tatau, ā, he aha ngā āhuetanga me ngā whakatōpūtanga o tēnei mahi tatau i runga i te whakawhitinga moana mai i Hawai'i tae rawa atu ki Rarotonga.

Ngā Rerenga

Kotahi o Pipiri te rā, kotahi karaka te wā, ka kumea te waka a Te Aurere ki waho i te whanga o Honolulu. Ka whakarerea te whenua kātahi ka wetea te taura tō. Ka tū motuhake te waka. Nā Heke-nukumai i tuitui ngā whakaaro me ngā whakamoemiti ki runga, ki ngā atua me ngā tūpuna. Ka wherawherahia ngā rā, ka rere atu mātou. Ko tā Tāwhiri-mātea, ko te 10 noti

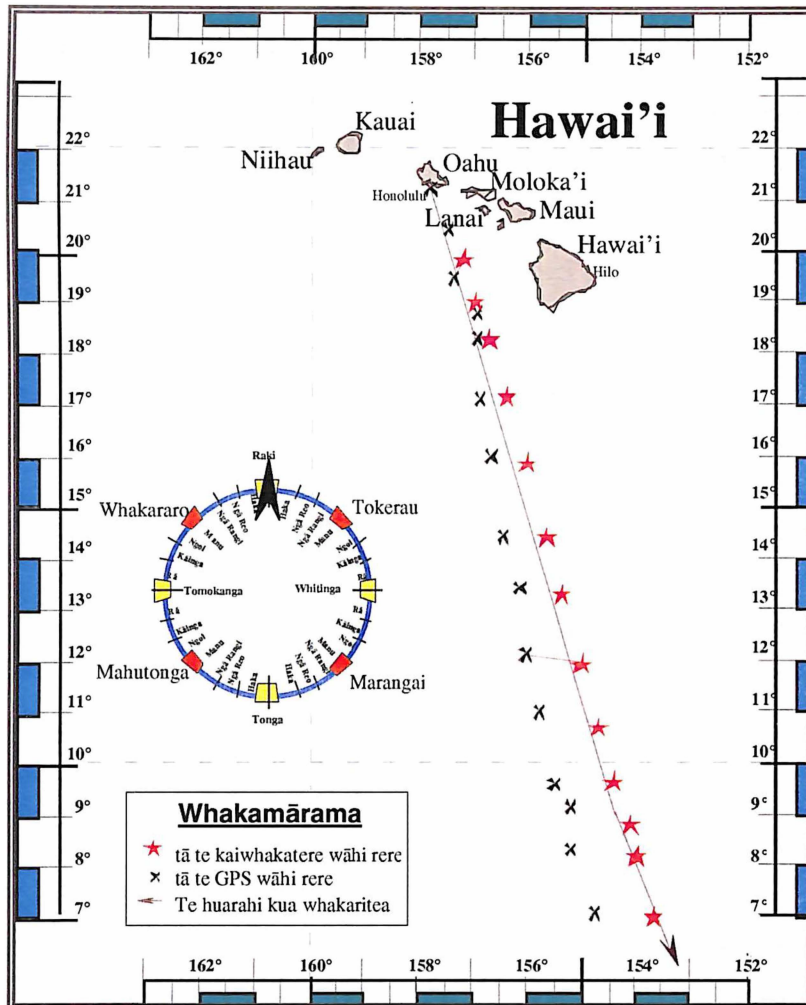
pea mā te whare o Manu i Tokerau. Ko tā Tangaroa, ko te 1-2 mita te teitei mā te whare o Manu i Tokerau. Ko te tere o te waka e whā noti pea. Ka tere ngaro te whenua i a mātou.

Wāhanga I

1-7 Pipiri:

21° 19'N - 07° 02'N

Ka whakaatu ngā rerenga a te waka a Te Aurere i te *Whakaahua 24...*



Whakaahua 24 : Wāhanga 1 Te Tīmatanga

I roto i te *Whakaahua 24* kua whakatakoto i te huarahi kia tīmata ai i tētehi wāhi whakarunga tonu i te moutere nui o Hawai'i. I whānei, nā ngā māharahara ki ngā hau e kōpikopiko ana i te taha whakaruru o ngā motu o Hawai'i. Heoti, ka tae rawa ki te wā wehe, ka tōtika tonu mai te āwhina a Tāwhiri-mātea i te

Whitinga. Ka rerekē ngā whakaritenga, ka puta tōtika i a Honolulu, i reira kē tīmata ai te whakawhitinga.

I te *Whakaahua 24*, e rua ngā tohu o ia rā, tētehi i te ata, tētehi i te ahiahi. Ko ngā tohu whero he whakaatu i ngā wāhi rere ki te tirohanga a te kaiwhakaterere waka. Ko ngā tohu pango he whakaatu i ngā wāhi rere tūturu ki te kōrero a te GPS, i te poti tautoko a Potzalana. Hei te *Āpitianga V* ka whakarārangitia ngā wāhi rere a te kaiwhakaterere me ngā wāhi rere a te GPS.

Ka hohoro te waka i tēnei wāhanga. Ki te noho te kaumoana ki runga i te waka ka noho mākū, he kaha whatiwhati mai nō ngā ngaru. Te pāwera hoki i reira, he tarau anake ka mau, arā, he tarau mākū. I te hihiri ngā wairua kaumoana katoa nā te ū a Te Aurere ki tāna mahi whakawhiti moana.

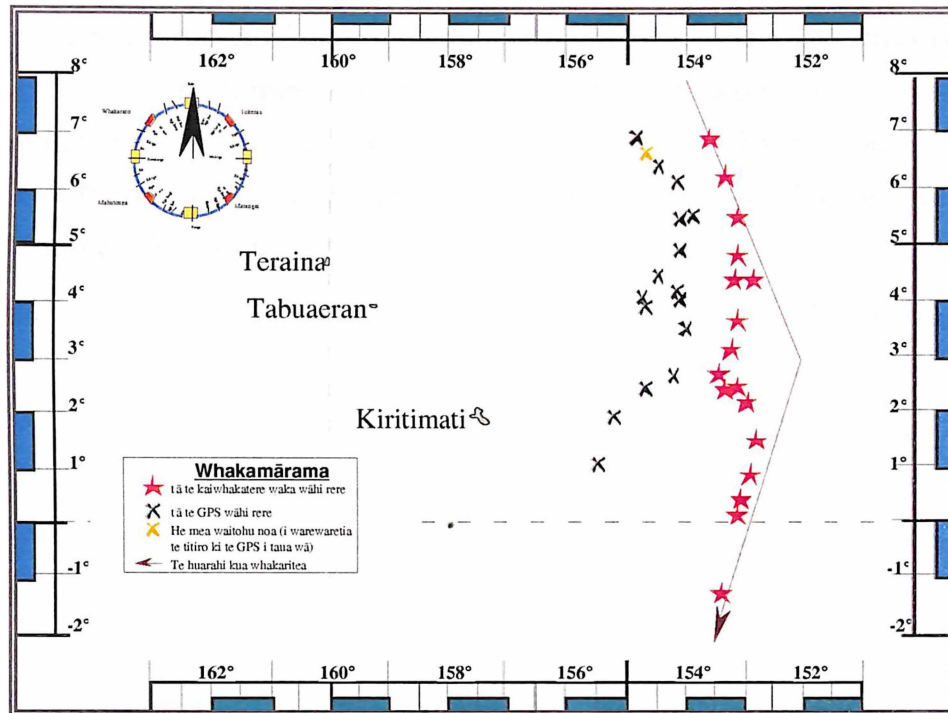
Nā te kaha o ngā ngaru me te kaha mānukanuka o te waka i ngā rā tīmatatanga ka māuiui ngā puku. Ko tōku tētehi. I mua i te haerenga ka whakapono ko au tētehi e whērā ana, ā, i te taenga atu ka kitea e tika ana ōku whakapono. Ka pahemo te wiki kotahi, ka wāia ngā tinana (me ngā wheua) ki te tāhurihuritanga i runga i te moana.

Ka ātaahua ngā āhuetanga o te rangi tae noa ki te pō tuaono. I konei ka heke te ua, ka māmā haere te pā mai o ngā apū, ka whakaatu mai a Hinemoana i ngā āhuetanga o tōna tuarā. Ka kōuaua te rā 7 o Pipiri. Ka tika tonu tō mātou mōhio kua oti te wāhanga I o te haerenga.

I te wiki tuatahi ka rite tonu te kaha pupuhi mai a Tāwhiri-mātea i te aronga pai, 10-25 noti tōna hohoro. Ka ahu mai mā te Whitinga. Ka rite tonu te teitei o ngā ngaru o Tangaroa, 1-2 mita te whati mai mā te aronga i te Whitinga. Ka rite tonu hoki te tere o te waka rangatira, o Te Aurere: 5-7 noti te tere i te nuinga o te wā. Nō reira, i te wiki tuatahi e 880 maera te tawhiti i reira.

Wāhanga II 8-16 Pipiri: 07° 02'N - 01°08' S

Ko *Whakaahua 25* ko ngā rerenga i te Tuahiwinui-ā-Hinemoana.



Whakaahua 25: Wāhanga II Te Tuahiwinui-ā-Hinemoana

Mā tēnei whakaahua ka taea te kite e noho tata ana ngā tohu rerenga. E whēnei ana nā te mea kāore he tere nō te waka i tēnei takiwā. I ētehi wā ka hoki whakamuri kē. Ko te tohu kōwhai he mea tuhi hei whakakī i te wā i wareware i te poti tautoko te titiro ki te GPS.

I tēnei wāhanga ka rerekē ngā āhuatanga i te rangi, i te moana hoki. Ka tāmaru i runga, ka māmā i raro. Ka heke te ua. Ko te whānau puhi ka takahuri mā ngā pae Tonga. I reira mātou ka raru. Kāore e āhei ana te waka ki te nuku whakatemua. Kotahi te rā ka noho i raro i tēnei āhuatanga, me tō mātou mōhio, āe rā, kua tae rawa ki te Tuahiwi-nui-ā-Hinemoana. Ka huihui ngā kaiwhakahaere o te waka kia wānangangia ai tētehi huarahi hei whakaputa mātou. Ko te otinga atu, ko te rerenga a te tono, 'Herengia ki te poti tautoko, mā tāna mīhini mātou hei whakaputa i tēnei āhuatanga.' Ka whītikina

tōtikahia ki te poti tautoko ka kumea mātou e tāna mīhini.

Ka ahiahi, ka ara ake i te pae tētehi pāroro, he hautupua rawa te āhua. Ka nuku mai. Anō nei he matapari pōkēao. Ka nuku mai. Kei tua atu i tōna awe māpara ko te mutunga kē mai o te pōuriuri. Ka nuku mai. Ka whakawehi i a mātou. Ka nuku tonu mai. Ka tirohia e au, ko te awatea o te rangi kei muri, ko te kerekere o te pō kei mua. Ka whakatata mai. Ka whakatāpouritia te poti tautoko e tō ana i a mātou. Kātahi ka kōpakina mātou e te pō kerekere, e te pō tangotango o Pōkēkohu.

Ono hāora pea ka mau a Te Aurere i te karawhiu o te āwhā kātahi ka māmā haere. Heoi, ka mate tonu mātou i te aronga o te hau me tōna ngoi-kore.

Ko te 8 o Pipiri te rā, e tō ana te poti tautoko i a mātou kātahi ka pakaru rawa tāna mīhini. I pahū te manawa hinu. Tē taea te paku whakatika i konā, i waenganui moana. Nā reira, ka tūturutia rawatia te mahi. Inaiānei mā ngā atua anake mātou e kawē. Ki te kore a Tāwhiri-mātea e rata mai ka kore mātou e nuku. Nā konā, ka noho mātou i te Tuahiwi-nui-ā-Hinemoana mō ngā rā e waru.

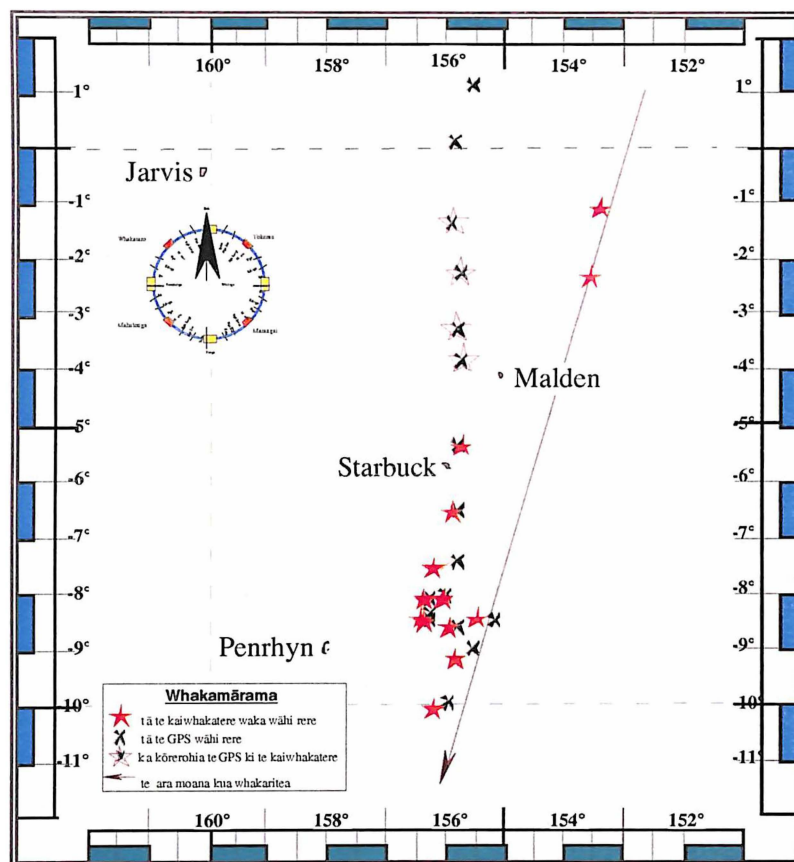
Ko tā mātou mahi i taua wāhi he hure hau, he kimi puhi, he rapurapu apū kia taea ai e mātou te haere whakamua. I taritari mātou, i taritari, i taritari. He maha ngā rerenga kupu whēnei ana, 'Akuni pea hei āpōpō ka pupuhi mai.' Heoi, ko te nuinga o aua rā e waru, ka aewa noa mātou. Ko tā ngā āwhā me ngā tūpuhi mahi he kōtītiti haere, anō nei he papa tākaro taua takiwā mā rātou. Engari tonu ka paki ētehi o ngā rā. Ahakoa ka pōkino ngā rangi, ka maomao rānei ka noho marino tonu te kareta. He wāhi ātaahua tēnei mō te noho noa, mō te pōteretere noa, engari ki te haere koe ki tētehi ūnga kē ka takeo haere ki te wāhi nei. Ko tētehi painga, kāore e kaha ana te pīoioi o te waka, he māmā te hikoi i runga i te waka, he māmā hoki te kai i runga i te waka, he māmā te tunu kai i runga i te waka, ā, kāore ngā ngaru e whakamākūkū mai.

Whakatoi mai ai ngā tuku hā a Tāwhiri-mātea i tēnei wāhanga. Ko ētehi he kaha, ko te nuinga he māmā noa, kāore i pā mai mā te aronga takitahi. Nā

konā, ki te rere ngā amotai o Tangaroa, ka rere mā ngā aronga takitini, ā, ka iti iho te teitei i te kotahi mita. Ka pūrewa noa te waka rangatira a Te Aurere. Tata ki te 450 maera i rere, engari 300 maera noa iho ka rere mā te ara moana i whakaritea.

Nāwai rā ka pupuhi mai a Tāwhiri-mātea mō ētehi hāora, ka mehameha noa i ētehi hāora. I raro i tēnei āhuetanga, ahakoa he pōrori te haere, ka whakaputa i te Tuahiwinui-ā-Hinemoana.

Wāhanga IIIa 16-24 Pipiri: 01°08' S - 10°02' S



Whakaahua 26: Wāhanga IIIa Te Nohopuku Tuarua

He uaua te whakaterere waka hourua i te Tuahiwinui-ā-Hinemoana. Ka rere mai ngā amotai mā ngā aronga maha; ka ahū mai ngā hau mā ngā aronga maha; ka kōruru ngā rangi. I te putanga atu kāore e takitahi ana ngā wāhi rere a te kaiwhakaterere waka me ngā wāhi rere a te GPS. Ko te tikanga, i te *Whakaahua*

26, ka noho tahi ngā wāhi tuatahi kua tuhia te tohu whero me ngā wāhi tuatahi kua tuhia te tohu pango. Engari ia ko te 170 maera kē te tawhiti mai i tētehi tohu ki tētehi atu.

Ko māua ko Heke-nukumai anake i titiro ki ngā wāhi e ai ki te kaiwhakatere waka, me ngā wāhi e ai ki te GPS. I te 17 o Pipiri ka āwangawanga a Heke nā te rahi o te rerenga kētanga. Ki te haere whēnei tonu, kāore pea e tae tōtika ki Rarotonga, nā, i runga i tērā whakaaro, ka whakamōhio atu ki te kaiwhakatere ki whea kē mātou e rere ana.

Ka āhua ohorere te kaiwhakatere waka. E rua ngā rā ka whakatikatika ia i tāna mahi, ā, i te 19 o Pipiri ka tīmata anō ia ki te whakatere i te waka hourua nei. Nō reira, ko ngā tohu māwhero-pango i te *Whakaahua 26*, he wā i titiro te kaiwhakatere waka ki ngā wāhi rere o te GPS.

I tēnei wāhanga o te whakawhitinga ka tīwara tā mātou rere i ngā moutere e rua, i a Malden rāua ko Starbuck. Ahakoa ko te tekau maera noa iho te tawhiti, kāore tonu mātou i kite i aua motu. Ka mea atu ētehi kaumoana kua kitea e rātou he rerenga kētanga kei ngā kapua, he tohutohu i te whenua, engari he marangai hoki kei te rangi i taua wā, nā, ka uaua te tirohanga. Anō nei, ko mātou anake kei waenganui tonu i te tāhorahora nui rawa.

Kātahi tētehi āwhā ka noho mai ki runga i a mātou. I ngā tūpuhi whēnā e mārāma tonu ana te kitenga kei te whawhai nui tonu a Tāwhiri-mātea rāua ko Tangaroa. Ka makamaka iho ngā haupatu a Tāwhiri-mātea, ka karawhiua ake ngā whakahoki a Tangaroa, ka ihiihi iho ngā huripari, ka whakarāwhaki ake ngā whatiwhatinga tūātea. Ka patua, ka patua, ka patua, e kore rawa tētehi i toa i tētehi. Nā, ko tā Tane-whakapiripiri mahi, ko tā te waka hourua mahi, he kūpapa atu ki waenganui i ngā hoariri rā, ki waenganui i te whiunga a te patu, ki roto hoki i te mura o te ahi.



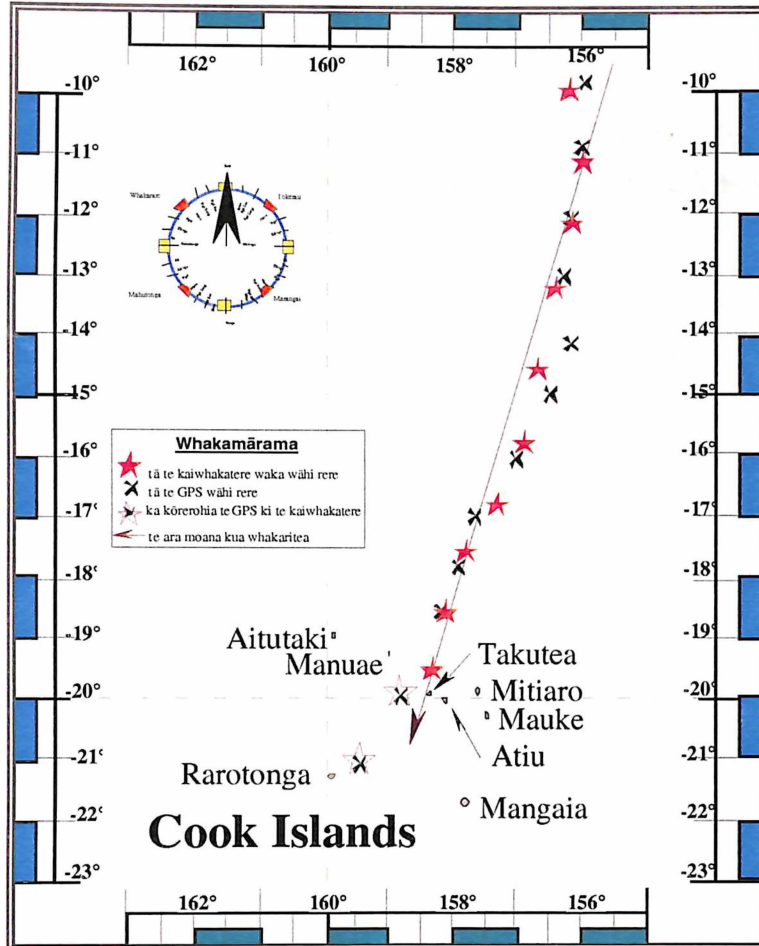
Pikitia 4: He āwhā i te moana e haere mai ana

Ka ngaro atu te āwhā rā ka paki te rā. Ka hīa e Tāwhiri-mātea i tōna hā. Kāore te waka i neke. Kotahi te rā, ka rua, ka toru, ka whā, ka noho tonu mātou i te wāhi kotahi. Anō nei kua mau i te kupenga nui. Te tahutahu hoki a Tamanui-te-Rā. I kaukau te nuinga o mātou i reira, he mahana nō te wai, he purata hoki nō tō Tangaroa kāinga. Kua ruharuha haere ō mātou tinana, ko te takeo kei ngā hinengaro. Ka takoto mātou i runga i te kaupapa, whakamaroke tinana ai, whakamaroke kākahu ai. Ko ētehi e ngutu pī ana i ō rātou moemoea, he wātakirihi tō tēnā, he poaka tō tēnā, he laolao tō tēnā, he aihikirimi tō tēnā, he pia mātaotao tō tēnā. Ka kitea e tētehi te kōauau kua hanga ki te kōiwi hipi, ka warea e ia te mate kiko hipi.

I tēnei wāhanga, e whā ngā rā ka rongona te ringa kōpana o Tāwhiri-mātea, 15 noti mā te Whitinga, ā, i aua rā ka piki ake ki te kotahi mita pea ngā pūkarukaru o Tangaroa. E whā ngā rā ka ngaro a Tāwhiri-mātea i a mātou, ka marino rawa tō Tangaroa kāinga. E 600 maera te tawhiti i rere te waka hourua i aua rā e waru.

Wāhanga IIIb 24-30 Pipiri: 10°02' S -21°14' S

Ko tēnei, te wāhanga i whakaoti ai i te rerenga.



Whakaahua 27: Wāhanga IIIb Te Whakaotinga

Roa mātou e nohopuku ana i te takiwā o Penrhyn, me te mōhio tonu, he ngāwari te kitenga, kei a wai te mana whakahaere i runga i te moana nui. Ahakoa te kaha o ngā ngaru, ngā rerenga hoki o ngā ia, kei a Tāwhiri-mātea kē te mana whakahaere o ngā waka hourua i runga i te pae o waho.

I te takoto noa mātou kātahi ka kitea te pekepeke o ngā puhi ariki. Ka tū ake ngā kaumoana, ka rongō i te whātoro mai o te hau. Ka whakatūwherangia ngā rā, ka hopungia ngā apū, ka oho anō te waka a Te Aurere. Ka whakakaha te pupuhi mai, ka kamakama te rerenga, ka hikohiko ngā whatu manawa.

Ahakoia te tawhiti kei te toi, ka whakaponono mātou ki tēnei te apū o Tāwhirimātea e kore e memeha i mua mai i te ūnga. He koha i tukuna mai e Tāwhirimātea kia kawea rawa atu ai mātou ki ngā Kuki Airani. Ka whakatata ki ngā moutere rā ka hiamō haere ngā tinana, ka rū ngā manawa, ka reka katoa hoki ngā whakaaro.

Ka hipa ki waenganui o ngā moutere o Manuae me Takutea. Heoi, nā te teitei o ngā ngaru, nā te pūrehurehu me te pouri o runga, kāore e kitea i tētehi o aua moutere. Ka rere tōtika ki Rarotonga.

I tēnei te wāhanga whakamutunga, i pūmau tonu te āwhina mai a Tāwhirimātea, 10 noti tōnā taikaha, mā te Whitinga. Pakepake mai ai ngā amotai o Tangaroa, tae rawa ki te 2 mita te teitei, i rere mai mā ngā aronga i te Whitinga. E 800 maera te tawhiti i rere te waka rangatira i ngā rā e ono nei hei whakatūtuki ai i ōna tūmanako.

Ngā Tohutohu O Ngā Atua

E whai mai ana ngā tohutohu o runga i te rangi, ngā tohutohu hoki o runga i te moana i kitea ē mātou i te whakawhitinga mai i Hawai'i ki Rarotonga. He mea kite-ā-karu, he mea mahi-ā-ringa kia whakarārangitia ai, kia aratakina ai te waka hourua a Te Aurere i te marama o Pipiri, i te tau 1995.

Te Ārahi a Te Whānau Mārama

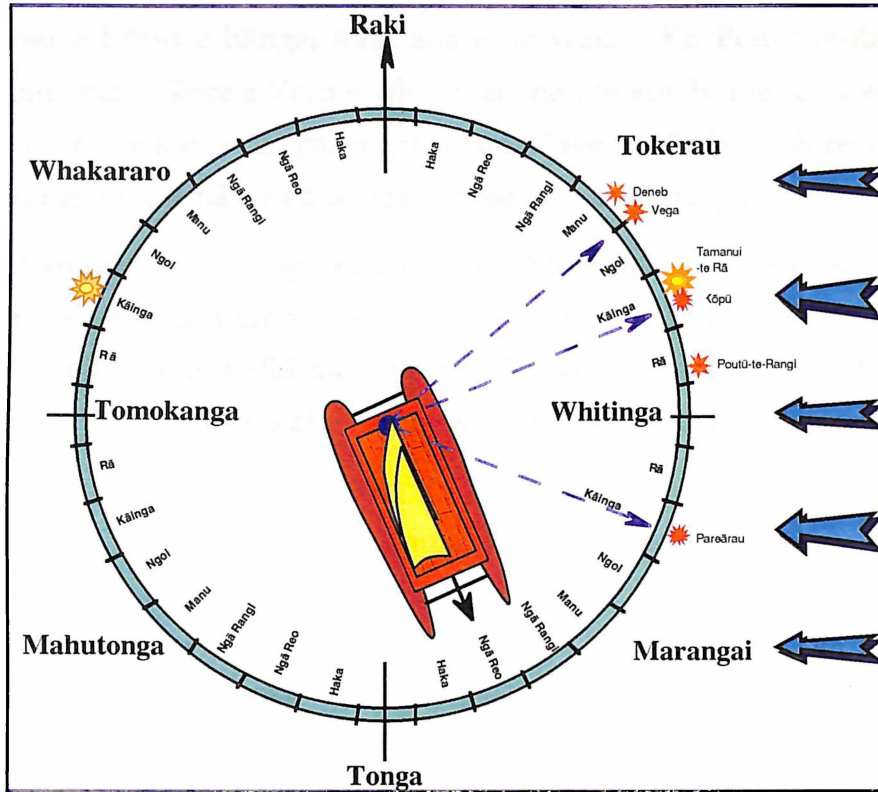
Tata te katoa o te rerenga ko tā Tāwhiri-mātea mahi, he whakapā mai mā ngā whare i te Whitinga. Nā, ka whakarara atu ngā rā ki te Tomokanga, ka ngaro noa ngā whetū o te Tomokanga ki tua i aua rā nunui. Ko ngā tohu o te rangi e māmā ana ki te kimi, ko ngā tohu i te Whitinga.

Hāunga i ngā ao kōruki me ngā pō pouri, i whakarārangitia e te kaiwhakaterere i te waka ki ngā tohutohu o runga. I te wāhanga tuatahi o te haerenga ko te tūmanako kia aro ki te whare Ngā Reo, whēnā ki te *Whakaahua* 28.

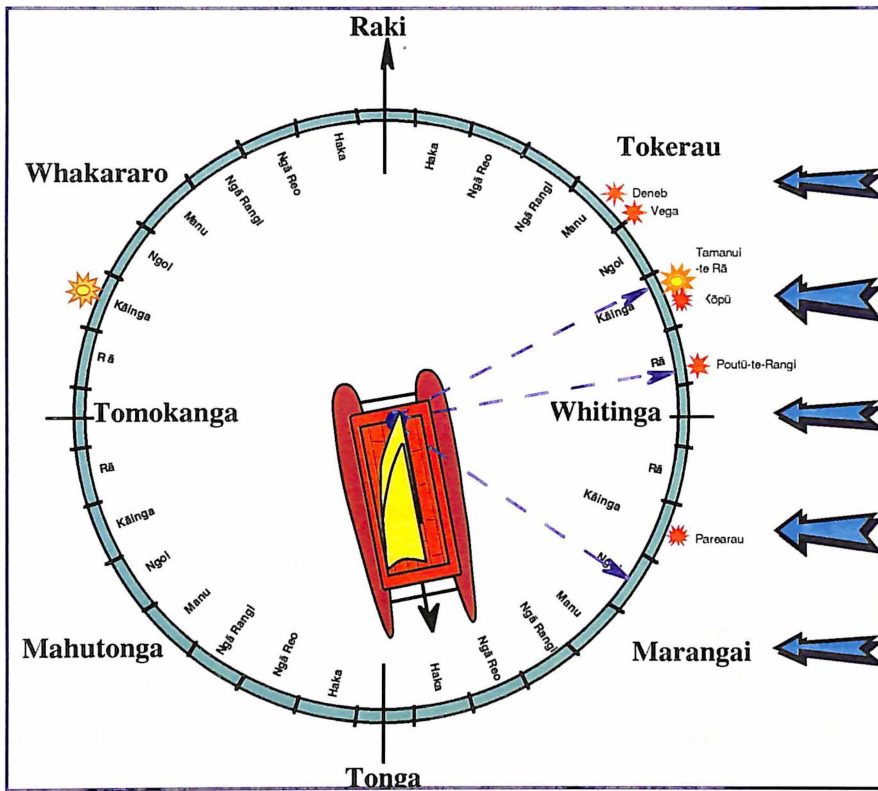
I te awatea i tirohia e mātou te rerenga tāwhana a Tamanui-te-Rā. Ka whēnei tāna rerenga, ka whiti mai i te whare o Kāinga i Tokerau, ka tō atu ki te whare o Kāinga i Whakararo. Nō reira, i tēnei aronga, i whakarārangitia ngā kahokaho muri i te waka ki te whitinga mai a Tamanui-te-Rā, ā, i whakarārangitia aua kahokaho ki te tōnga atu a Tamanui-te-Rā, engari kia whā ngā whare ki muri i te waka.

I te pō ka tirohia ngā whetū. Mehemea kei te haere tōtika te waka ki Ngā Reo; ko Kōpū tērā e hāngai tonu ana ki te waka, ko Vega tērā, kotahi me te hāwhe o ngā whare ki muri i te hāngaitanga, ko Pareārau tērā, e whā ngā whare ki mua i te hāngaitanga.

I roto i te *Whakaahua* 29 kua kōtiti kē te aronga o te waka mā te whare o Haka. He mea ngāwari tēnei te kite. Tuatahi ko te whitinga mai me te tōnga atu o te rā ka rerekē. I tēnei aronga ka whiti mai te rā, kotahi kē te whare ki muri i te hāngaitanga, ā, ka tō atu, e toru kē ngā whare ki muri.



Whakaahua 28: Ka aro te waka ki 'Ngā Reo'



Whakaahua 29: Ka Aro Te Waka ki 'Haka'

Kāore hoki a Kōpū e hāngai tonu ana ki te waka. Ko Poutū-te-Rangi kē e hāngai tonu ana. Kāore a Vega e whiti mai ana i te kotahi me te hāwhe o ngā whare ki muri i te hāngaitanga, engari e rua kē me te hāwhe. Kāore a Pareārau e whiti mai ana i te whā o ngā whare ki mua i te hāngaitanga, engari e toru kē.

Kua whakarerekē ngā aranga katoa nā te hē o te aronga o te waka. He mea tere kitea e te kaiwhakaterere waka. Ehara hoki i te mea ka titiro te kaiwhakaterere waka nei ki a Tamanui-te-Rā me ngā whetū tokorima noa iho. Ka tirohia ngā whetū maha. Ko ētehi i ara ake i ētehi wā o te pō ko ētehi i ara ake i ētehi atu wā o te pō.

Ki te karo i te kapua ngā whetū o mua, ka tirohia ngā whetū o muri. Ki te ngaro ngā whetū o muri, ka tirohia ngā whetū ki te taha. Ki te ngaro te katoa mō te wā roa, ka whakatū te waka. I tētehi pō, i ahau e urungi ana, ka uaua te mahi. Ka ngaro ngā whetū o mua i te waka, ka huri au ki muri. E rima meneti pea ka ngaro ngā whetū i reira, ka huri au ki te taha. Ka ngaro ki reira, ka hoki au ki mua. He wā poto ka ngaro te katoa, ka tīmata au ki te rongō i ngā ngaru e whakapīoioi ana i te waka me ngā hau e whakakīkī ana i ngā rā. Tekau meneti i muri mai, ka puta mai anō ētehi whetū, ka māmā anō te mahi.

E whā ngā wā i te katoa o te haerenga i whakatūria te waka hourua nā te ngarotanga o ngā tohutohu o runga i te rangi.

Ko tā te marama he kōkiri atu i waenganui i ngā whetū. I te whakarerenga i te whenua ka whiti mai te marama i te whare Kāinga i te Tokerau. Ka nuku haere te whitinga mai ki te whare Kāinga i te Marangai, ā, ka hoki haere anō ki te whiti mai i te whare Kāinga i te Tokerau. I wehe mātou e toru ngā pō i muri mai i te tauwhirowhiro o te marama. He pai tēnei nā te mea i te taenga atu ki te Tuahiwinui-ā-Hinemoana, kua rākaunui te marama. He kaha nōna i te wā i te āta kimi mātou i ngā tohutohu o runga.

I ētehi wā ka whakarārangitia te waka ki te marama i ngā awatea. I ētehi wā ka whakarārangitia te waka ki te marama i te pō. Engari i mua i te whakarārangitia ka āta tirohia e te kaiwhakaterere waka kei whea kē te marama i taua wā. Ka rahi ngā wā ka arahina mai te waka e te marama.

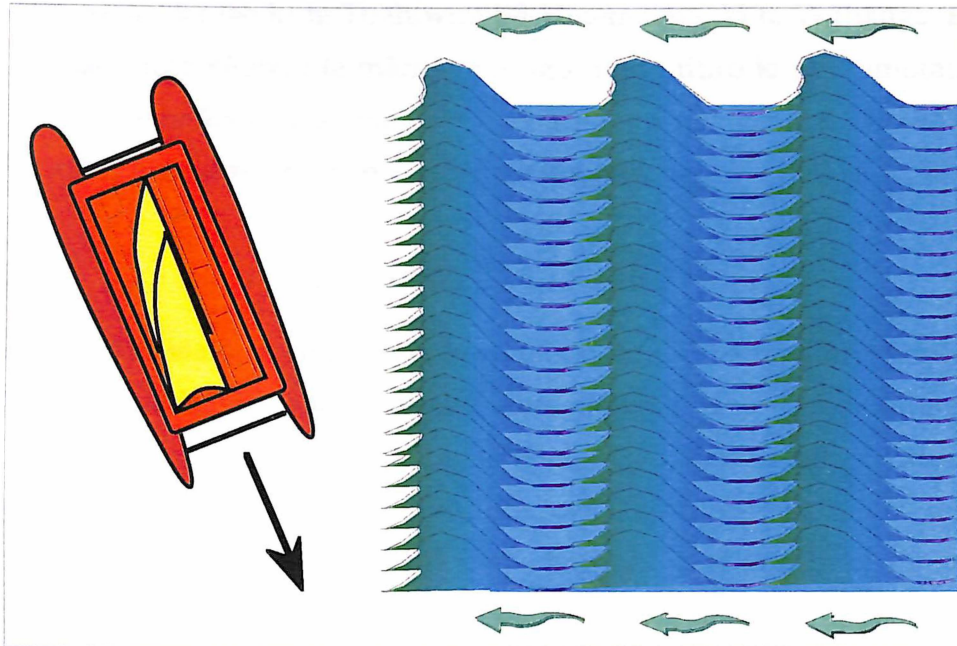
Te Ārahi a Tangaroa

Ko te rongo i ngā amotai tētehi tohu nui. E wāia ana ngā kaumoana tautōhito ki te titiro ki ngā piki me ngā heke o ngā ngaru me te whāki atu ko tēhea te amotai e rere mai ana mā te Whitinga, ko tēhea te amotai e rere mai ana mā te Tonga, mā whea rānei. Ehara i te mea he māmā te kitea, engari mehemea ka roa tāu mataara, ā, ka maha rānei āu noho i runga i te moana kātahi ka mārama mai ētehi ritenga ngaru. Ko ngā amotai nui ka kitea e mātou i kōkiri mai mā te Whitinga, mā te whare Manu i Tokerau, mā te whare Manu i Marangai hoki. He tohu āwhina ēnei i te aronga o te waka.

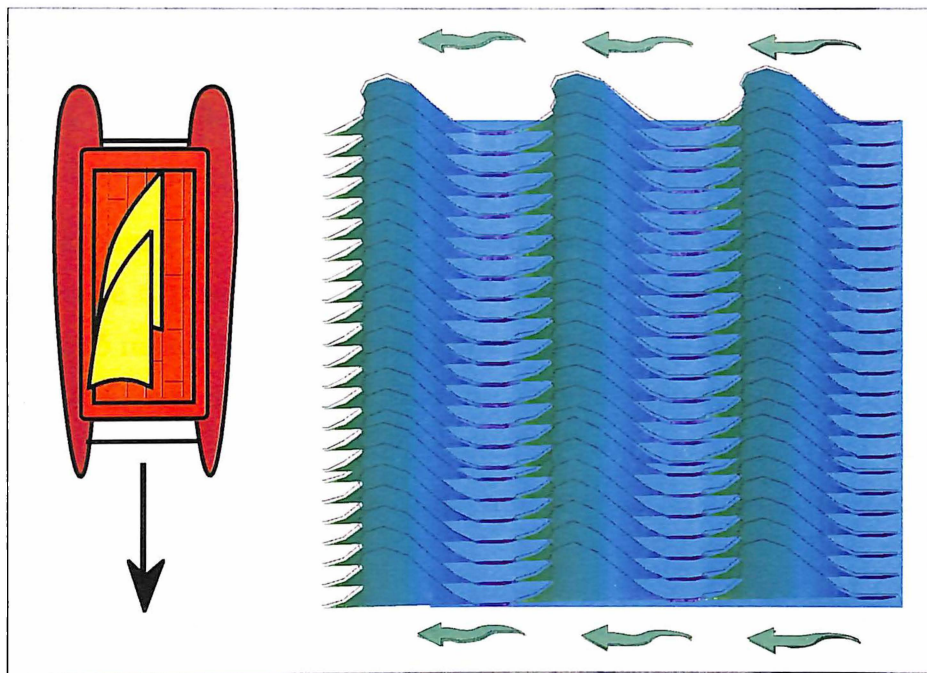
Hāunga i te tirohanga, i te wāhanga tuatahi, ka taea hoki te rongo i ngā amotai nā te mānukanuka o te waka hourua.

Tirohia te *Whakaahua 30*. I whēnei i te wāhanga I o te haerenga, ko te amotai matua ka pūrewa mai mā te Whitinga. Ko te waka ka aro ki te whare o Ngā Reo. Nō reira, i te *Whakaahua 30* ka whēnei te rongo ki ngā ngaru; ka piki te ihu mauī, ka hiki tēnā i te pikinga o te kei mauī me te ihu katau, ka heke aua wāhanga i te pikinga o te kei katau, ka hiki te kei katau, ā, kua hipa te ngaru.

Mehemea ka huri te waka kia whērā i te *Whakaahua 31* he ngāwari noa iho kia kite ka piki te ihu me te kei o te taha mauī i te wā kotahi kātahi ka whai atu te ihu me te kei o te taha matau. Ka tere mōhio te kaiurungi kua hē te aronga o te waka. I te *Whakaahua 30* he itiiti noa iho ngā ngaru ka whati ki runga i ngā kaumoana e noho ana, e takoto ana i runga i te kaupapa, engari kē mō te pōrutu mai o ngā ngaru ki runga i ngā kaumoana i te *Whakaahua 31*. I ētehi wā, ka nui te whati mai a te ngaru ki runga i te kaumoana, ā, ka tere huri tōna kanohi ki te kaiurungi kia kite mehemea e tika ana tāna mahi.



Whakaahua 30: Ngā Amotai i te Aronga ki 'Ngā Reo'



Whakaahua 31: Ngā Amotai i te Aronga ki 'Haka'

Nō reira, e āhua ngāwari ana te rongō i ngā amotai i te wāhanga tuatahi o te

haerenga, engari ka tae ki te Tuahiwinui-ā-Hinemoana, ki te Wāhanga Tuatoru hoki o te haerenga kāore, i te māmā te rongō me te titiro ki ngā amotai. I aua takiwā o te moana ka rere te maha (te kore rānei) o ngā amotai i te wā kotahi, ka uaua mā mātou e whiriwhiri ko tēwhea tēwhea.

Ngā Tamariki a Tangaroa

He kaitiaki tō te waka a Te Aurere, ko tētehi o ōna āhua he aihe. E whitu pea ngā wā ka tūtaki mātou ki te hunga aihe, engari e toru ngā huihuinga aihe nunui i kitea. E whitu tekau pea te rahi o tētehi rōpū, he tamariki ō rātou āhua. Ka panau ake, ka rukuruku iho, ka whakapūhoru ki tēnā taha, ka whakapūhoru ki tērā taha, ka tūpekepeke ki mua, ka tūpekepeke ki muri. Te harikoa hoki kei ā rātou tākaro. E whā hāora pea ka kōkirikiri mai rātou. Koia nei hoki te wā e tata ana mātou ki te pae waenganui o te ao. Ka tipu ake te whakaaro nā rātou mātou i kawē kia whakawhitia ai taua pae.

Ehara te kitenga ki ngā aihe i te tohutohu e āta kōrero ana kei whea mātou, engari ka whēnei ngā whakaaro, 'Kua tae mai anō tō mātou kaitautoko, tō mātou kaiārahi, ko te āhua nei kei te tika tonu tā mātou takahi.' E tata tonu ana ki te whanga o Ngā Tangi'ia ka kitea e mātou te aihe whakamutunga.⁶⁶

I te putanga atu i te Tuahiwinui-ā-Hinemoana ka mui mai te tira Haku. He maha ki mua e tūpekepeke ana, he maha ki muri e tūpekepeke ana. Ka noho taua rōpū i tō mātou taha mō te wiki kotahi, neke atu rānei. Inā ka hopungia te hau ka nuku whakamua te waka, ka nuku whakamua hoki te hunga ika nei. Inā kare kau he hau, ka noho noa te waka, ka noho noa hoki ō mātou hoa ika. Anō nei, nā tā rātou tiakitanga i taea ai e mātou te nukunuku haere i taua takiwā akaaka o te moana.

Nā te maha o ngā ika, ka maha hoki ngā manu e hī-ika ana. E toru tekau pea te rahi. I reira ngā Kiwa, ngā Tara, ngā Amokura, ngā Ngongo me ngā Kena hoki. I taua wā, i te mōhio mātou kei waenganui tonu mātou i te māhoranui. I

⁶⁶ Ka kōrero mai ngā tāngata whenua o Rarotonga i taua wā, he uaua rawa te kite i ngā aihe ki reira.

te tōnga o tētehi rā, ka āta mātakitaki māua ko Sesario i ngā manu, otirā i ngā Ngongo. He waru, he iwa rānei ka rere tōtika ki te Tomokanga. Ko tā Sesario ki a au, “arā, te huarahi kia tae atu ai ki tētehi whenua, akuni pea ki a Kirimati.”

⁶⁷ Nō reira, ka aratakina mai e ngā tamariki a Tāne-māhuta hoki.

Te Ārahi a Tāwhiri-mātea

I ngā rā i kōruki o runga i te rangi me te kore rere ngātahi mai a ngā amotai, ka noho mā ngā apū o Tāwhiri-mātea e tohutohu mai. E rima ngā wā roa (nuku atu i te kotahi hāora) i whēnei. I aua wā ka urungi te waka ki ngā āhuetanga o te rā matua me te rā tauaki. Mehemea e kī rawa ana ngā rā i te hā o Tāwhiri-mātea, ka whakakake ki te hau. Mehemea e piupiu noa ana ngā rā, ka whakaheke i te hau.

I ētehi rā i te hiahia mātou ki te aro ki te whare o Ngā Reo i Marangai, engari nā te ahu mai o ngā puhi (mā ngā whare i te Marangai) ka aro kē te waka ki te whare o Haka i Marangai. I aua wā, ka whēnā anō te mahi. Inā ka kī rawa ngā rā ka whakakake ki te hau, inā ka piupiu noa mai ngā rā ka whakaheke i te hau. Ka āta tirohia ngā puhi ariki. Ki te tika te rere o te puhi ariki, ka tika te aronga o te waka i taua hau.

Tērā tētehi ahiahi ka kitea te āwhiowhio. I te pae, āhua 10 maera pea te tawhiti, ka kitea ētehi kapua e tū taki ana. Kua whakarārangitia he pou kapua. Ka tū rā, ka tū rā, kātahi ka takahuri haere. Ka hohoro te tāwhirowhiro ka tiro mākutū atu mātou. Ki te pā mai te āwhiowhio rā ki a mātou e kore rawa e taea e mātou te aha. Ka poto te wā ka māmā haere te takahuri. Ka pōturi haere, ā, ka ngaro noa te āwhiowhio. Ka hotu ngā manawa o te hunga mātakitaki.

⁶⁷ I te taenga ki te whenua, ka tirohia e au ngā mapī, me te wā i kōrero whēnā mai a Sesario, ā, i te tika ānā whakatau.

Te Mahi Tatau O Te Kaiwhakaterere Waka

He Kupu Takataka

Ko te noti, ko te tere o te waka, arā, e hia ngā maera⁶⁸ ka haere i te hāora kotahi. Nā reira, mehemea ko te 10 noti te tere o te waka, i roto i te hāora kotahi ka hipa te waka i te 10 maera.

Ko tā te Pākehā, ko te whakawehewehe i te ao whānui ki ngā rārangi *longitude* me ngā rārangi *latitude*. Ka rere ngā rārangi *longitude* mā te Tonga me te Raki. Ka rere ngā rārangi *latitude* mā te Whitinga me te Tomokanga. I roto i ngā mahi tatau a ngā kaiwhakaterere waka i ēnei rā, kāore he tirohanga ki ngā rārangi *longitude*, engari ka tirohia ngā rārangi *latitude*.

I whakawehewehea te ao kia 180 ngā rārangi *latitude*, arā, kia 180°: e 90 ki te Raki, e 90 hoki ki te Tonga. Ka noho te pae waenganui o te ao⁶⁹ i te 0°, ko Hawai'i kei te 21°N, ko te Pou Raki kei te 90°N, ko Rarotonga kei 21°S, ko Aotearoa kei 40°S, ko te Pou Tonga kei 90°S.

E hāngai ana ngā rārangi *latitude* ki ngā maera. Ka whēnei ; 1° = 60' (meneti), 60' = 60 maera ki te Tonga, ki te Raki rānei (arā, i te aronga *latitude*). Nō reira, ki te haere tōtika te waka 180 maera ki te Tonga, ka hipa i te 180' ki te Tonga, ā, ka nuku i te 3° ki te Tonga. He aronga whakaterunga, whakateraro anake tēnā, e kore e taea te tatau whēnā mō te aronga ki te Whitinga, ki te Tomokanga, ki tētehi atu rānei.

Ka mōhio te kaiwhakaterere waka i whakarerea te whenua i whea. Ka āta tatau ia i ngā tawhiti me ngā aronga i rere ai te waka. I te whakawhitinga atu o te rā, i te whakawhitinga mai hoki o te rā, ka whakatōpū ia i ngā tatau. Ka whakataua ake te kaiwhakaterere waka kei whea hoki te waka i aua wā. I tēnei wāhanga o

⁶⁸ I te katoa o tēnei tuhinga ko te maera, he maera-ā-moana (Nautical maera).

1 Maera-ā-moana = 1.15 maera-ā-whenua = 1852 mita.

⁶⁹ E ai ki te Pākehā, ko te *equator*.

te ūpoko ka whakamārama i ngā mahi tatau a te kaiwhakaterere waka hourua.

Ngā Tatau Nui E Rua

E rua ngā tatau me mōhio te kaiwhakaterere waka. Tuatahi, pēwhea te tawhiti kua haere whakaterunga, whakateraro rānei (arā, te latitude). Tuarua, pēwhea te tawhiti kua kōtiti i te ara moana i whakaritea. Nā tōnā mōhioanga ki ēnei tatau e rua ka āta mōhio ia kei whea te waka.

Mehemea e rima noti te tere o te waka, i roto i te rā kotahi ka hipa i te 120 maera, (5 noti x 24 hāora = 120 maera). Mehemea ko te ara moana kua whakatakotoria, ka haere mā te Tonga, ā, ka pūmau tōtika te waka ki taua ara, i taua rā ka haere 120 maera, ka nuku 2°, kāore he kōtiti. Ka ōrite te rerenga o te waka, te ara kua whakaritea, me te tawhiti whakaterunga. Ka whēnā i te *Whakaahua 32.(i)*.

He ngāwari noa iho te tauira i runga, i te wā ka whai tōtika te waka i te ara moana mā te Tonga. Engari e kore ngā whakawhitinga moana e whēnā ana. Kāore he maha ngā ara ka whakaritea kia haere mā te Tonga. Kāore te waka hourua i pūmau tōtika katoa ki ngā ara moana kua whakaritea.

Ngā Nama Tauira E Whitu

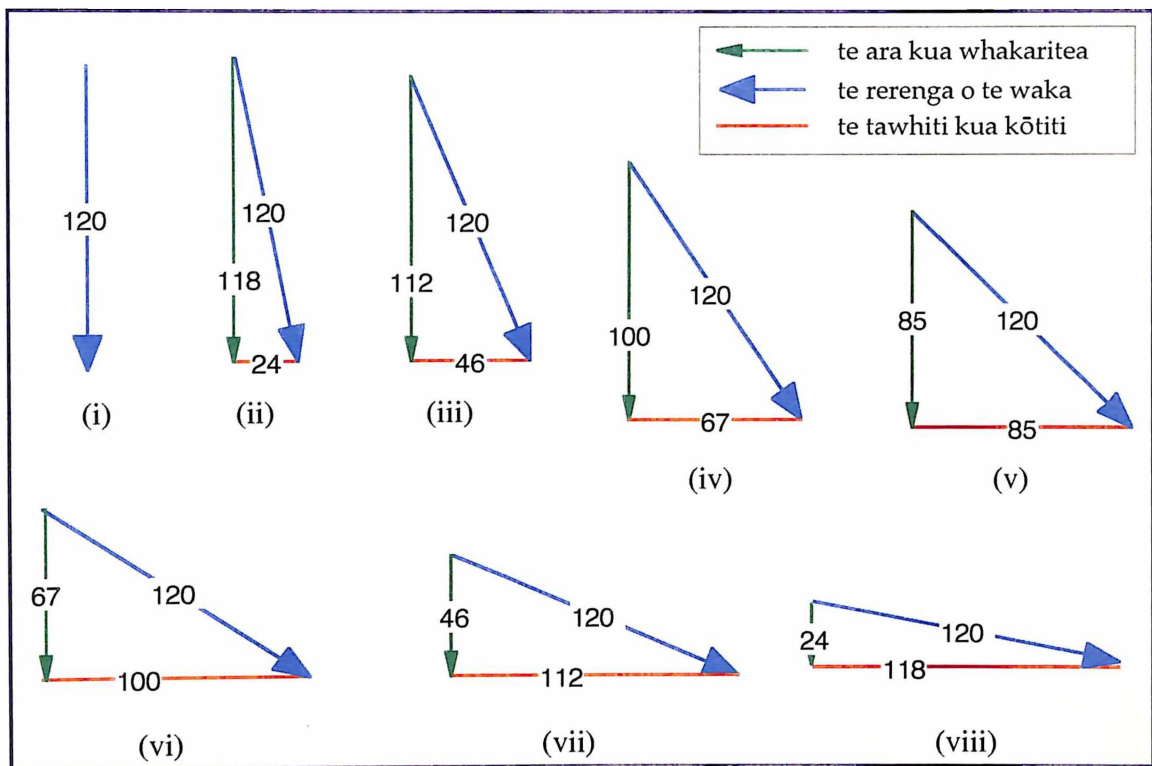
Kua hangaia tētehi huarahi kia kimi ai i te tawhiti whakaterunga, i te tawhiti kōtiti hoki, inā kāore te ara moana me te waka hourua e haere mā te Tonga. E whitu ngā nama tauira ka maumahara te kaiwhakaterere waka. Ki te maumahara ia i aua nama tauira e whitu ka taea e ia te tatau i te tawhiti whakaterunga, i te tawhiti kōtiti hoki, ahakoa he aha te ara moana kua whakatakotoria, ahakoa i rere te waka mā whea, ahakoa hoki he aha te tere o te waka.

Ka whēnei ngā nama taurira e whitu;

	<u>te kōtiti</u>	<u>ngā maera</u>
(i)	0 whare	120 / 0
(ii), (viii)	1 (7) whare	118 / 24
(iii), (vii)	2 (6) whare	112 / 46
(iv), (vi)	3 (5) whare	100 / 67
(v)	4 whare	85 / 85

Ka hāngai ngā nama taurira nei ki te *Whakaahua 32*. Ka hāngai te kapa tuatahi ki ngā wāhanga o taua whakaahua. Ko te kapa kōtiti he kōtiti i tō te waka aronga. Ko te kapa tuatoru ngā maera ka rere te waka mehemea e 5 noti tāna tere, ā, ka haere mō te 24 hāora. Ko te whakaaro hoki ko te ara moana i whakaritea ka haere mā te Tonga.

Nō reira, mehemea kāore te waka e kōtiti ana, ka rere te waka i te 120 maera ki te Tonga, whēnā i te *Whakaahua 32.(i)*;



Whakaahua 32: Ngā Tatau Tawhiti, inā mā te Tonga te Ara Moana

Mehemea ka rere te waka mā te whare o Haka kē i Marangai: kotahi te whare i

kōtiti, ko 118 maera te tawhiti whakaterunga, ko 24 maera te tawhiti i kōtiti. Tirohia te *Whakaahua* 32.(ii).

Mehemea ka rere te waka mā te whare o Ngā Rangi kē i Marangai: e 3 ngā whare i kōtiti, 100 maera te tawhiti whakaterunga, e 67 maera te tawhiti i kōtiti. Tirohia te *Whakaahua* 32.(iv).

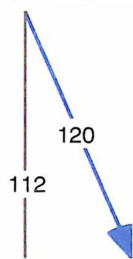
Mehemea ka rere te waka mā te whare o Kāinga kē i Marangai: e 6 whare i kōtiti, ko 46 te tawhiti whakaterunga, ko 112 te tawhiti o te kōtiti. Tirohia te *Whakaahua* 32.(vii).

Ka whēnā hoki ngā tawhiti mehemea i kōtiti te waka ki te taha Mahutonga o te ara moana. He tauira māmā tonu tēnei, nā te mea, i whakaritea kia haere te ara moana mā te Tonga.

Te Aronga Mā Te Whare O Ngā Reo

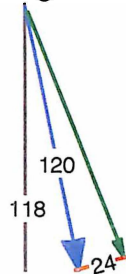
Tēnā, me titiro ki te tauira mehemea i whakaritea kia haere te ara moana mā te whare o Ngā Reo i Marangai (i whēnei i te Wāhanga Tuatahi i te whakawhitinga mai ki Rarotonga). Ko te tere o te waka e rima noti tonu, ā, ka haere mō ngā hāora e 24. I te tuatahi ka rere mā te ara moana, i te tuarua ka rere mā te whare o Haka, i te tuatoru ka rere mā te whare o Manu...

tauira tuatahi;
aronga Ngā Reo



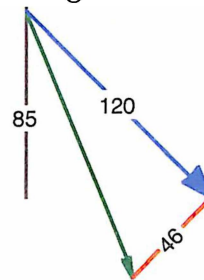
- 112 whakaterunga
- 0 kōtiti

tauira tuarua;
aronga Haka



- 118 whakaterunga
- 24 kōtiti

tauira tuatoru;
aronga Manu



- 85 whakaterunga
- 46 kōtiti

Whakamārama

- te ara kua whakaritea
- te rerenga o te waka
- te tawhiti kua kōtiti
- te tawhiti whakaterunga

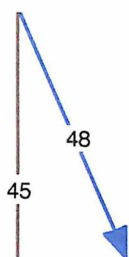
Nō reira, ahakoa ka whakaritea te ara moana kia haere mā hea, ahakoa ka kōtiti te aronga o te waka ki whea, ka hāngai tonu aua nama e whitu ki te tatau i te tawhiti whakaterunga, ki te tatau hoki i te tawhiti kōtiti.

E Rua noti Te Tere O Te Waka

Ka titiro inā ka rerekē te tere o te waka. I ēnei tauira, e rua noti te tere o te waka. Ka whakaritea te ara moana mā te whare o Ngā Reo, e 24 hāora te roa. I te tuatahi ka rere mā te ara moana, i te tuarua ka rere mā te whare o Haka, i te tuatoru ka rere mā te whare o Manu.

tauira tuatahi;

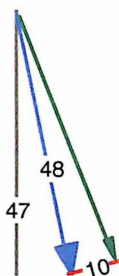
aronga Ngā Reo



- 45 whakaterunga
- 0 kōtiti

tauira tuarua;

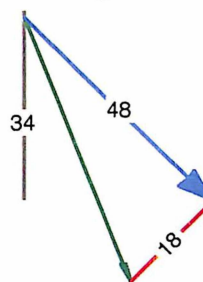
aronga Haka



- 47 whakaterunga
- 10 kōtiti

tauira tuatoru;

aronga Manu



- 34 whakaterunga
- 18 kōtiti

Whakamārama

- te ara kua whakaritea
- te rerenga o te waka
- te tawhiti kua kōtiti
- te tawhiti whakaterunga

Ko ngā tawhiti hou nei i ara ake i te whakawhiti mai i ngā nama tauira e whitu. He tātai kia whakawhiti i ngā nama tauira e whitu ki ngā āhuatanga rerenga. Ka whēnei te tātai;

$$\text{tawhiti} = \text{nama tauira} \times \text{tere}/5 \times \text{roa}/24^1$$

Nā reira i ngā tauira i runga nei, i whēnei:

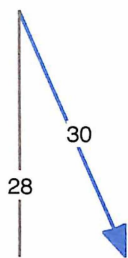
tauira tuatahi;	-	120	x	2/5	x	24/24	=	48
	-	112	x	2/5	x	24/24	=	45
tauira tuarua;	-	120	x	2/5	x	24/24	=	48
	-	118	x	2/5	x	24/24	=	47
	-	24	x	2/5	x	24/24	=	10
tauira tuatoru;	-	120	x	2/5	x	24/24	=	48
	-	85	x	2/5	x	24/24	=	34
	-	46	x	2/5	x	24/24	=	18

¹ Ko te tawhiti, he maera kua haere whakaterunga (whakateraro rānei), he maera kua kōtiti rānei. Ko te nama tauira, ko te nama tika i te whakaahua 11 e hāngai tonu ana ki tāu ake haerenga. Ko te tere, he tere nō te waka. Ko te roa, ko te wā e rere ana te waka i taua terenga, mā taua aronga.

E Ono Hāora Te Roa O Te Rerenga

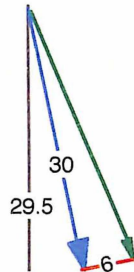
Ka titiro anō ki aua rerenga engari ka rerekē te roa o te wā ka haere. I tēnei tauira e rima noti te tere o te waka, ka whakaritea te ara moana mā te whare o Ngā Reo, e 6 hāora kē te roa. I te tuatahi ka rere mā te ara moana, i te tuarua ka rere mā te whare o Haka, i te tuatoru ka rere mā te whare o Manu.

tauira tuatahi;
aronga Ngā Reo



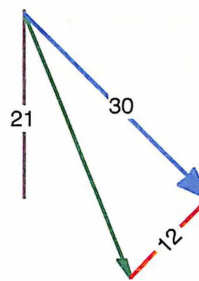
- 28 whakaterunga
- 0 kōtiti

tauira tuarua;
aronga Haka



- 29.5 whakaterunga
- 6 kōtiti

tauira tuatoru;
aronga Manu



- 21 whakaterunga
- 12 kōtiti

Whakamārama

- te ara kua whakaritea
- te rerenga o te waka
- te tawhiti kua kōtiti
- te tawhiti whakaterunga

I ēnei tauira, ko te mea rerekē, ko te roa e rere ana. Me uru taua rerenga kētanga ki te tātai nei:

$$\text{tawhiti} = \text{nama tauira} \times \text{tere}/5 \times \text{roa}/24$$

Me whēnei,

tauira tuatahi;	-	120	x	5/5	x	6/24	=	30
	-	112	x	5/5	x	6/24	=	28
tauira tuarua;	-	120	x	5/5	x	6/24	=	30
	-	118	x	5/5	x	6/24	=	29.5
	-	24	x	5/5	x	6/24	=	6
tauira tuatoru;	-	120	x	5/5	x	6/24	=	30
	-	85	x	5/5	x	6/24	=	21
	-	46	x	5/5	x	6/24	=	12

Nō reira, ahakoa ka rere te waka mā hea, ahakoa ka whakarite te ara moana mā hea, ahakoa te tere me te roa o te haerenga, ka taea te tatau i pēwhea te tawhiti i haere whakaterunga, i pēwhea hoki te tawhiti i kōtiti i te ara kua

whakaritea. Heoi, me mau tika ki aua nama tauira e whitu, me mōhio hoki me pēwhea te whakawhiti tika i aua nama ki ngā āhuatanga o tāu ake nei haerenga.

Mehemea ka kaha te au moana, ka rerekē hoki te terenga o te waka. Inā ka whēnā me uru atu hoki aua āhuatanga ki ngā mahi tātai nei. He tauira i ngā mahi tātai i te 26 o Pipiri, i te whārangi 85.

Ki te āta tātari i ngā mahi whika kua whakatakotoria i runga ake nei ka kitea pea ngā hē pakupaku rawa ka uru mai i te tatau tawhiti kōtiti. Ka ngarongaro noa aua hē i te wā ka hoki te waka ki runga i te ara moana i whakaritea. Nā te pakupaku o aua hē, i te mahi-ā-ringa i runga i te moana, kāore aua hē i kitea.

Ētehi Tauira Nō Te Rerenga

I te whakawhitinga mai i Hawai'i ki Rarotonga, e rua ngā mahi tatau a te kaiwhakatere i ngā wāhi rere, ia rā, ia rā. Kā whēnā ia i te whitinga mai o Tamanui-te-Rā, i te tōnga atu hoki o Tamanui-te-Rā. Nō reira, ka riro tekau mā rua hāora mā ia wāhanga. E whai mai ana ētehi tauira, nō te whakawhitinga mai i Hawai'i ki Rarotonga, tētehi i te pō 4 o Pipiri, tētehi i te rā 26 o Pipiri.

Te Pō I Te 4 o Pipiri

I te tōnga o te rā, i te 4 o Pipiri, ko tā te kaiwhakatere, i tae atu ai te waka hourua a Te Aurere ki te 14°32' N (i te wāhanga Raki o te ao), ā, 16 maera te tawhiti kua kōtiti ki te taha Whitinga o te ara moana i whakaritea.

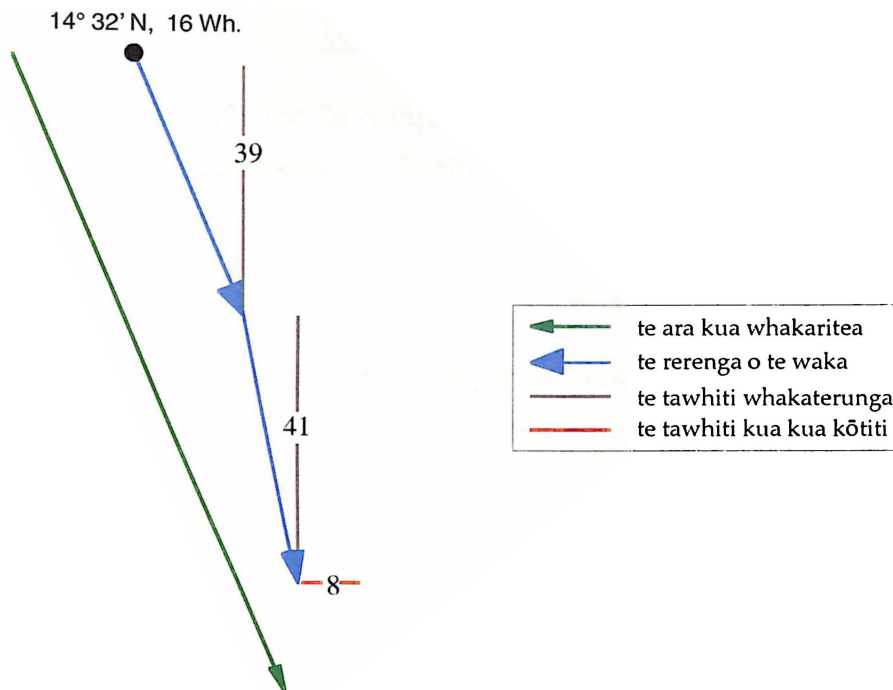
te tūranga i te ata

14° 32' N 16 Wh

te rerenga i te pō

(i) Ngā Reo (Marangai) te aronga, 7 noti, 6 hāora

(ii) Haka (Marangai) te aronga, 7 noti, 6 hāora



tawhiti whakaterunga

	nama tauira	x	tere/5	x	roa/24	
(i)	112	x	7/5	x	6/24	= 39
(ii)	118	x	7/5	x	6/24	= 41
						39 + 41 = 80 = 1° 20'

tawhiti kōtiti

	nama tauira	x	tere/5	x	roa/24	
(i)	0	x	7/5	x	6/24	= 0
(ii)	24	x	7/5	x	6/24	= 8
						0 + 8 = 8 maera ki te Tomo.

<u>tatau</u>	14° 32' N	-	1° 20'	=	13° 12' N
	16 Wh	-	8 T	=	8 Wh.

Nō reira, i te whitinga mai o te rā, i te 5 o Pipiri, ka kī atu te kaiwhakaterere, i tae atu ai a Te Aurere ki te 13°12' N (i te wāhanga Raki o te ao), ā, 8 maera te tawhiti kua kōtiti ki te taha Whitinga o te ara moana i whakaritea.

Te Rā 26 o Pipiri

I te whitinga mai o te rā, i te 26 o Pipiri, i tae atu ki te 14°24' S (i te wāhanga Tonga o te ao), ā, 17 ngā maera kua kōtiti ki te taha Whitinga o te ara moana.

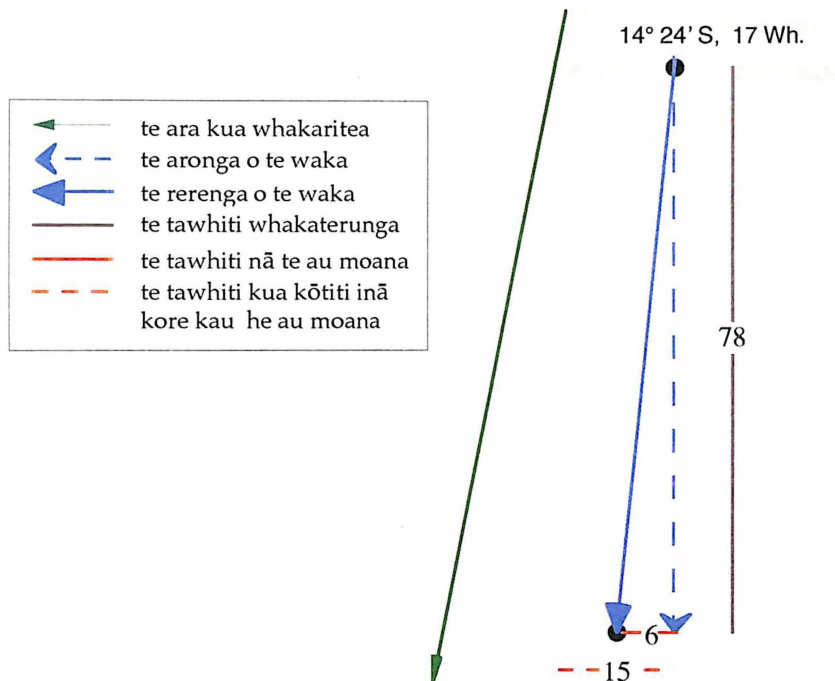
te tūranga i te ata, 26 o Pipiri;

14° 24' S 17 Wh

te rerenga i te rā 26 o Pipiri

(i) Tonga te aronga, 6.5 noti te tere, 12 hāora

(ii) Tomokanga te ia, 1/2 noti, 12 hāora¹



tawhiti whakaterunga

	nama tauira	x	tere/5	x	roa/24	
(i)	120	x	6.5/5	x	12/24	= 78
(ii)	0	x	0.5/5	x	12/24	= 0
						78 + 0 = 78 = 1° 18'

¹ Ehara tēnei i te rerenga a te waka, engari kē ko te ia o Tangaroa, 0.5 noti ki te Tomokanga.

tawhiti kōtiti

	nama taura	x	tere/5	x	roa/24		
(i)	24	x	6.5/5	x	12/24	=	15 ki te Whitinga
(ii)	120	x	0.5/5	x	12/24	=	6 ki te Tomokanga
							15 - 6 = 9 maera ki te Whiti.

<u>tatau</u>	14° 24' S	+	1° 18'	=	15° 42' S
	17 Wh	+	9 Wh	=	26 Wh.

I tēnei taura, kotahi te aronga o te waka engari e rua ngā tātai, he mea kua tāpiri kia uru mai ai ngā tātai i te au moana o Tangaroa. Nā reira, e ai ki ngā mahi tatau, i te tōnga o te rā, ka tae te waka ki te 13°12' N (i te wāhanga Raki o te ao), ā, 8 maera te tawhiti kua kōtiti ki te taha Whitinga o te ara moana.

Ngā Rerenga a Te Waka

Ko ngā rerenga e whai mai nei, ko ngā rerenga katoa nō ngā tuhituhi a te kaiwhakatere waka i te whakawhitinga mai i Hawai'i ki Rarotonga.

Rā	Aronga o te Waka	Tere Hāora		Aronga o te Waka	Tere Hāora	
2-6-95	rā Ngā Rangi (Mara.)	4.5	6	pō Ngā Reo (Mara.)	4.5	12
	Ngā Reo (Mara.)	4.5	6			
3-6-95	rā Ngā Reo (Mara.)	6.5	12	pō Ngā Reo (Mara.)	7	12
4-6-95	rā Ngā Reo (Mara.)	7	12	pō Ngā Reo (Mara.)	7	6
				Haka (Mara.)	7	6
5-6-95	rā Ngā Reo (Mara.)	7	12	pō Ngā Reo (Mara.)	7	6
				Ngā Rangi (Mara.)	4.5	4
				Haka (Mara.)	4.5	2
6-6-95	rā Ngā Reo (Mara.)	6	12	pō Ngā Reo (Mara.)	6	10
7-6-95	rā Tonga	8	2	pō Manu (Mara.)	3	1
	Ngā Reo (Mara.)	3.5	7	Ngā Reo (Mara.)	6	11
	Ngā Reo (Mahu.)	6	2			
8-6-95	rā Ngā Reo (Mara.)	4	12	pō Whitinga	1.5	2
				Haka (Mara.)	4	6
				Tonga	4	4
9-6-95	rā Tonga	3.5	9	pō Tonga	3	6
	Haka (Mara.)	4	3	Haka (Mahu.)	3	2
10-6-95	rā Tonga	3	3	pō Ngā Reo (Mahu.)	4	12
	Whitinga	3	3			
	Ngoi (Mara.)	2.5	6			
11-6-95	rā Ngā Reo (Mahu.)	3	6	pō Ngā Reo (Mahu.)	2	12
	Tonga	3	6			
12-6-95	rā Tonga	2	3	pō Whitinga	4	3
	Haka (Mahu.)	3	2	Whitinga	3	2
	Manu (Mahu.)	3	3	Whitinga	2	1
	Whitinga	3.5	4			
13-6-95	rā Whitinga	2	1	pō Ngā Reo (Mara.)	2.5	5
	Haka (Mara.)	3	3	Haka (Mara.)	2	2
	Whitinga	0.5	3	Ngā Rangi (Mara.)	4	3
	Haka (Mara.)	1	5	Ngā Reo (Mara.)	5.5	2
14-6-95	rā Tonga	4	12	pō Ngā Haka (Mahu.)	4	4
				Ngā Rangi (Mahu)	2	6
				Tomokanga	0.5	2
15-6-95	rā Tomokanga	0.5	1	pō Tonga	5	6
	Ngā Reo (Mahu.)	3	3	Haka (Mahu.)	4.5	6
	Tonga	4.5	4			
	Haka (Mara.)	4	4			
16-6-95	rā Haka (Mahu.)	5	3	pō - ⁷²		
	Haka (Mara.)	6.5	3			

⁷² I konei ka tirohia te GPS, karekau he tuhituhi.

Rā	Aronga o te Waka	Tere Hāora		Aronga o te Waka	Tere Hāora			
17-6-95	rā	Tonga	6.5	6	pō	Haka (Mahu.)	5.5	6
	rā	-				Ngā Reo (Mahu.)	5.5	6
18-6-95	rā	Tonga	6	3	pō	Tonga	6	12
19-6-95	rā	Tonga	6	5	pō	Haka (Mara.)		4
		Haka (Mara.)	6	6		Tonga		4
		Tomokanga - ia	0.5	12*		Haka (Mahu.)		4
		Ngā Rangi (Mahu.)	4	3		pō	Tomokanga - ia	1
20-6-95	rā	Tonga	3	3	pō	Haka (Mahu.)		4
		Haka (Mahu.)	3	4		Tomokanga - ia		6
		Ngā Reo (Mahu.)	6.5	2		Ngā Rangi (Mara.)	3	2
		Tomokanga - ia	1	12*		Ngā Rangi (Mara.)	1	2
21-6-95	rā	Ngā Reo (Mahu.)	1	12	pō	Whitinga	3	2
		Tomokanga - ia	1	12*		Kāinga (Mara.)	4	2
		Manu (Mara.)	0.5	10		Ngoi (Mara.)	4	2
		Whitinga	3	1		Rā (Toke)	4	2
22-6-95	rā	Rā (Mara.)	5	1	pō	Kāinga(Toke.)	5.5	4
		Kāinga (Toke.)	4.5	1		Ngā Rangi(Mahu.)	4	2
		Ngā Reo (Mahu.)	5	3		Ngā Reo (Mahu.)	5	4
		Ngā Rangi(Mahu.)	5	8		Haka (Mahu.)	5	2
23-6-95	rā	Tonga	5.5	8	pō	Tonga	5	4
		Haka (Mara.)	4.5	4		Tomokanga-ia	0.5	12*
		Tomokanga-ia	0.5	12*		Haka (Mara.)	5	6
		Tonga	6	12		Tonga	5.5	6
24-6-95	rā	Tomokanga-ia	0.5	12*	pō	Tomokanga-ia	0.5	12*
		Tonga	6	12		Tonga	6.5	6
		Tomokanga-ia	0.5	12*		Haka (Mara.)	4	3
		Tonga	6	12		Tonga	7	3
25-6-95	rā	Tomokanga-ia	0.5	12*	pō	Tomokanga-ia	1	3*
		Tonga	6	12		Tomokanga-ia	0.5	9*
		Tomokanga-ia	0.5	12*		Haka (Mahu.)	6.5	12
		Tonga	6	12		Tomokanga-ia	1	12*
26-6-95	rā	Tonga	6.5	12	pō	Ngā Rangi(Mahu.)	4	2
		Tomokanga-ia	0.5	12*		Haka (Mahu.)	5	7
		Ngā Reo (Mahu.)	3	3		Tonga	6	3
		Ngā Rangi(Mahu.)	3.5	3		Tomokanga-ia	0.5	12*
27-6-95	rā	Ngā Rangi(Mahu.)	4.5	6	pō	Tonga	6	3
		Ngā Rangi(Mahu.)	4.5	6		Tomokanga-ia	0.5	12*
		Ngā Rangi(Mahu.)	4.5	6				
		Ngā Rangi(Mahu.)	4.5	6				
28-6-95	rā	Tonga	5.5	2	pō			
		Haka (Mahu.)	5.5	1				
		Tonga	5	2				
		Tonga	4.5	6				
		Ngā Reo (Mahu.)	4.5	1				
		Tomokanga-ia	0.5	12*				

Rārangi 1: Ngā Rerenga a Te Aurere, Pipiri 1995.

* Ko te au moana ka tāpiri ki ngā tatau rerenga.

Te Rapu Whenua

I whakaritea te ara moana kia tae ora ai ki ngā moutere i te Tonga o ngā Kuki Airani. Ko te tikanga, i te taenga atu ki taua takiwā, ka pā ki tētehi o aua motu kia mōhio mai ai mātou i tae ki whea. Ka āta kite mātou kei whea mātou, kātahi ka whakarite i te wāhanga tuawhā o te ara kia ū rawa ai ki Rarotonga.

I te rā 28 o Pipiri, i tae mātou ki te takiwā o ngā moutere. Ngarongaro katoa ngā tohutohu o Tangaroa i taua wā. Kua kore he paruparu whenua i rō wai. Kua kore he ika e ngau ana i ngā matau. Kua kore he rerenga kētanga o ngā tae moana. Kua kore he rerenga kētanga i ngā amotai (ki ā mātou tirohanga). Ka whēnā hoki ngā tohutohu o Tāwhiri-mātea. I rite tahi te pouri o runga i te katoa o te rangi. Tē taea tētehi o te Whānau Marama te kite. Tē taea a Tamanui-te-Rā te kite. Tē taea tētehi manu te kite, ki te kore he ika, ka kore he manu. I te mōhio mātou kua tae rawa ki taua takiwā nā te mahi tatau o te kaiwhakatere waka.

Ka maruahiahi te rā ka hui anō ngā rangatira. Āe rānei, me whakatū te waka ki kō, tatari ai ki te awatea, arā, ki te wā e ahei ana mātou te kite i ngā tohutohu whenua. Āe rānei, me haere tonu mātou i te pō, i runga tonu i ngā tohutohu o te GPS. Ko ngā whakaaro i puta; kua tika te mahi a te kaiwhakatere, i tae ora atu ai te waka ki reira; kāore e tawhiti atu te wāhi tū tā te kaiwhakatere waka ki te wāhi tū tā te GPS; kua roa rawa te wā i te moana; e whanga ana ngā tāngata whenua i Rarotonga ki a mātou. Ko te otinga atu, ka haere tonu mātou.

I taua pō i wehe rua mātou i ngā moutere o Manuae rāua ko Takutea. Kāore te paku tohu whenua i kitea.

I te ahiahi o te 29 o Pipiri ka kimihia ngā karu i te whenua o Rarotonga. I te mōhio mātou kei te tika te tirohanga nā te kitenga i te waka rererangi e haere whēnā ana. Āhua whā karaka pea ka ūmere atu a Ke Ahi me tāna tohutohu atu. I reira, i te pae tētehi hua e kore rawa au e wareware. Kei tawhiti, kei te pae o Tonga, he āhuetanga pakupaku noa iho, engari mārāma tonu atu: kotahi te maunga me ngā puke kei ngā taha! Ko Rarotonga!

He Tirohanga Whakamuri

Nō reira, i te mutunga, ka āhua whēnei kē ngā wāhanga o te haerenga:

Wāhanga I 21° 19'N - 07° 02'N

te tawhiti	≈	880 m
te tere	≈	6 n (144m/rā)
te roa	≈	8 ngā rā
te au moana	≈	12 m/rā Tomo.
	≈	62 m/wāhanga 1
te aronga	=	Ngā Reo -Mara.

Wāhanga II 07° 02'N - 01° 08'S

te tawhiti	≈	450 m
te tere	≈	3 n (72m/rā)
te roa	≈	8 ngā rā
te au moana	≈	kore (pea)
te aronga	=	Haka-Marangai

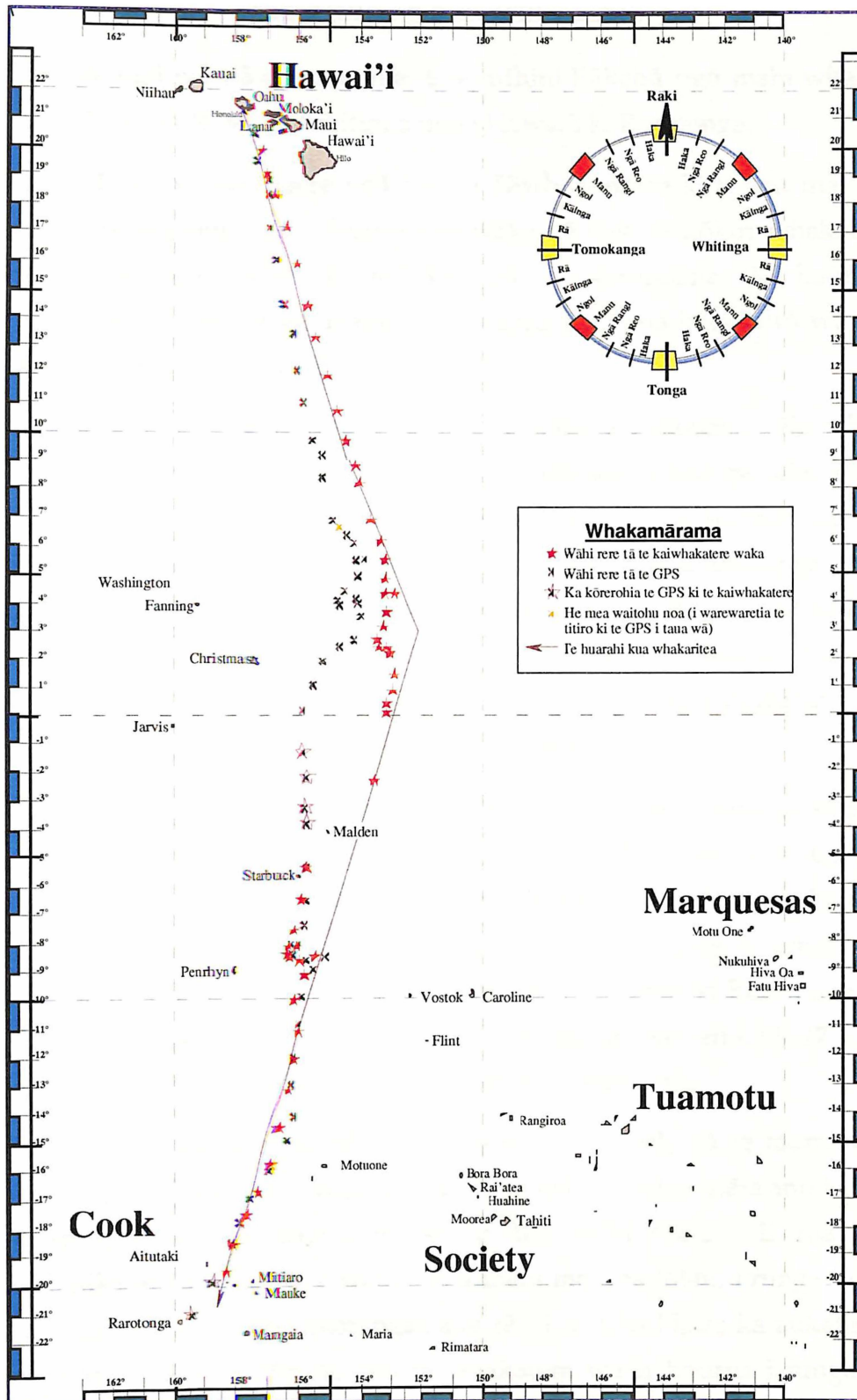
Wāhanga IIIa 01° 08'S - 10° 02'S

te tawhiti	≈	600 m
te tere	≈	2 n (48m/rā)
te roa	≈	8 ngā rā
te au moana	≈	12 m/rā Tomo.
	≈	138m/wāhanga 3
te aronga	=	Haka-Mahutonga

Wāhanga IIIb 10° 02'S - 21° 14'

te tawhiti	≈	800 m pea
te tere	≈	5 n (120m/rā)
te roa	≈	5 ngā rā
te au moana	≈	12m/rā Tomo.
	≈	16m/wāhanga 4
te aronga	≈	Haka-Marangai

Ko te katoa i tawhiti e 2730 ngā maera, ko te roa e 29 ngā rā.



Whakaahua 33: Te Ara Moana i Takahia e Te Aurere

Ngā Āwhina a te Mīhini Pākehā

Me kī, e toru ngā wā i āwhinatia mai e te mīhini Pākehā ngā mahi whakaterere waka a Te Aurere i te whakawhitinga mai i Hawai'i ki Rarotonga.

(i) I te 7 o Pipiri ka takahaere ngā puhi a Tāwhiri-mātea ki te aro mai mā te Tonga. Nā taua aronga ka nohopuku te waka, tē taea te kōkiri whakatemua. Ka noho, ka noho, ka noho. Ko te takeo kei ngā kaumoana. Ka huihui ngā rangatira o Te Aurere, ka whakaputa whakaaro e pā ana ki te autō wā me te tangata whenua e tatari ana i Rarotonga.

Ka ahiahi te rā, ka karangahia te poti tautoko, a Potzalana. Ka whiua te taura ki a ia, ka tīmata tāna kumekume. I taua wā, kāore kau he takunetanga i puta, engari ngā kare a roto. E 22 hāora i haukumea a Te Aurere, mā runga tonu i te aronga kua tohua e te kaiwhakaterere waka. I te ahiahitanga, i te 8 o Pipiri, ka pakaru rawa te manawa hinu o te poti tautoko. He paru nō te kōhinu i whakaurua. I mua rā he poti mīhini, he poti rā hoki a Potzalana. I muri mai he poti rā anake a Potzalana. I te pakarutanga a te mīhini a Potzalana, kāore kau he kupu kurekure i puta, engari ngā kare a roto.

(ii) I te putanga atu i te Tuahiwinui-ā-Hinemoana kua rahi te rerenga kētanga o ngā wāhi rere a te kaiwhakaterere waka me ngā wāhi rere a te GPS. Ka aratakina te waka hourua e te kaiwhakaterere i runga tonu i tōna whakapono ki āna wāhi rere. Ko te mate, ki te aro whēnā tonu te waka, hei te otinga ka tae kē atu ki Hāmoa pea. He uaua te whakawhiti mai i Hāmoa ki Rarotonga i taua kaupeka a te tau nā te ahua mai a ngā hau i te Whitinga. Nō reira, i te 17 o Pipiri, ka kōrerotia ngā wāhi rere a te GPS ki te kaiwhakaterere waka.

Ka aroha atu au ki te kaiwhakaterere waka i taua wā, nā te taumaha o te matangurunguru ka taka ki runga ki a ia. Heoi anō, ka whai māia anō ia, ka āta wanangangia e ia ngā take i rerekē ai aua wāhi noho. E rua rā ka whakatikatika te kaiwhakaterere waka i āna mahi me āna tataua, i runga hoki i te titiro ki te GPS. Ka nui tōna akoranga i aua rā. I te 19 o Pipiri, ka aukatingia te tirohanga ki te GPS, ka tīmata anō te whakaterere waka hourua i runga i ngā tikanga tawhito.

(iii) Ka rehurehu a Tamanui-te-Rā i te 28 o Pipiri, ka tirohia anō ngā wāhi rere a te GPS. Ehara i te mea i te ngaro mātou, i te rerekē rānei ngā wāhi rere a te kaiwhakaterere waka. Engari, ko te whakatau kua tae ki te takiwā e kimi ana mātou, kua tika ngā mahi a te kaiwhakaterere waka, ā, me kamakama inaiānei te whakaotinga i te whakawhitinga. Ki te kore mātou e titiro ki te GPS, ka tatari ki te awatea, ā, ka rapurapu haere ngā tohu whenua e āta whakamōhio ana kei whea hoki mātou.

Kua kī atu e toru ngā wā i takahia ngā tikanga tawhito, engari e rua ngā take i whēnā ai. I te 7 o Pipiri me te 28 o Pipiri ko Kaikā rāua ko Kaikaha i whakaete te waka hourua kia hohoro atu te taenga ki Rarotonga. Tērā pea ki te noho ō rāua tou ki raro, ki te mokonahatia ngā waha a aua kurī rā, kāore ngā tikanga tawhito i takahia i taua wā.

Ko te take tuarua i takahia ai, ko te uauatanga o te mahi whakaterere waka hourua i runga i te moana nui. Hāunga ngā wā korekore tohu, hāunga i ngā āhukatanga i te Tuahiwinui-ā-Hinemoana, hāunga hoki ngā pōua i patu mai ka raru te kaiwhakaterere waka i ēnei kaupapa. Ko ngā āhukatanga rerekē o tēnei whakawhitinga, ko te ruwaha, ko te ihupuku hoki.

Ko te whakawhitinga i Hawai'i ki Rarotonga, he mea rerekē ki ngā whakawhitinga katoa kua takahia e Te Aurere. He tawhiti rawa, he roa rawa. I te whakawhitinga mai i Nukuhiva tae atu ki Hawai'i, i te marama o Paenga-whāwhā, ka pā mai ngā hā o Tāwhiri-mātea mā te aronga kotahi, i te kaha kotahi, tata ki te katoa o te rerenga. Nō reira, kotahi te hanga a te rā matua, te rā tauaki me te rā ngongo-hau, ā, kotahi te tere a te waka. Kua wāia te kaiwhakaterere waka ki tēnā āhukatanga. Engari kāore i whēnā i te whakawhitinga ki Rarotonga. Kāore i takitahi te aronga me te kaha o ngā puhi. Ko te tere a te waka he kamakama, he pōturi, he nohopuku, he hoki whakamuri rānei. Nō konā, he maha ngā wā ka whakarerekē te rā matua, te rā tauaki, te rā ngongo-hau, ngā taura kutikuti me ngā taura whakaara. Ka rerekē aua hanga, ka rerekē hoki te whanonga a te waka hourua.

I te whakawhitinga ki Hawai'i tokorua ngā kaiwhakaterere waka. He āhukatanga pai tēnā, nā te mea, ka taea te riro te katoa o te mahi i tētehi kaiwhakaterere, ā, ka

whai wā tētehi atu kaiwhakaterere ki te moe. I te whakawhitinga roa nei ki Rarotonga, kotahi anake te kaiwhakaterere, e whā pea ngā hāora ka moe ia, ia rā, ia rā, ā, he moe tūtakarerewa. Ka roa te 29 o ngā rā ki te whēnā ngā moe.

He tauhou tonu te kaiwhakaterere waka a Te Aurere, a Jack Thatcher ki ngā mahi moana. Kāore ia i tipu i runga i te moana, whērā i ngā tūpuna Māori pea i ngā wā o mua. Ahakoa kua haere ia mā runga i te nuinga o ngā rerenga a Te Aurere i te moana nui, ko tēnei te whakawhitinga nui tuarua noa iho kua riro māna hei whakaterere. Kua riro hoki māna hei whakahaere te waka i te nuinga o te wā. He whēuaua te mahi whakahaere waka hourua me te mahi whakaterere waka hourua i te wā kotahi.

Nō reira, i te otinga atu ka tae ora mai te waka a Te Aurere me ōna kaumoana ki te takiwā o te Moananui-ā-Kiwa i hiahiatia ai. Kua whai wā aua kaumoana ki te mahi i tētehi mahi tawhito, i mahitia e ō rātou tūpuna, arā, te mahi whakawhiti moana nui i runga i te waka hourua. Ko te huarahi i takahia e rātou, tērā pea he huarahi kua takahia hoki e ō rātou tūpuna i ngā wā o mua.

He Whakarāpopoto

I te rānui, i te 30 o Pipiri ka tomo te waka a Te Aurere ki te whanga o Ngā Tangi'ia, ka ū ki te whenua o Rarotonga. Kua nui ake i te whā wiki kua ngaro te waka me ngā kaumoana i te whenua. Kua nui ake te tawhiti i te 2700 maera. Kua whakawhitingia te Moananui-ā-Kiwa i waenganui i Hawai'i me Rarotonga. Me kī, 'he moana pukepuke kua ekengia e te waka'.

Ko tā te Ūpoko IV nei he tirohanga ki taua whakawhitinga moana i runga i te mahi a te kaiwhakaterere waka hourua. Kua kōrerohia te ara moana, me ngā āhukatanga i whakaritea i mua i te wehenga. Kua wānangangia ngā wāhi rere ki tā te kaiwhakaterere waka mahi me ngā wāhi rere ki tā te GPS kōrero. Kua tirohia ngā tohutohu me ngā mahi tatau a te kaiwhakaterere waka. Kua whakaputangia ngā āhukatanga i te wā e rapu whenua ana, ā, kua tirohia whakamuri ki te katoa o te rerenga nei.

Nā te tātaritanga i ngā kōrero o te whakawhitinga mai i Hawai'i tae atu ai ki Rarotonga, kua kitea te whakatinana i ngā tikanga a te mahi whakaterere waka hourua. Ka riro mā te Ūpoko V ngā whakaaro whakamutunga e whakatau.



Ūpoko V Te Whītiki I Te Kī

Ka hoki whakamuri ngā mahara. Ko te kaupapa o tēnei tuhinga roa ko te whakaaturanga i te mahi whakatere waka hourua.

I tirohia ngā whakapono o tauwiwi e pā ana ki te whakatere waka hourua. E rua ngā whakaaro ka puta nā tēnei tirohanga. Tuatahi, ka kaha te iwi Pākehā ki te whakarerekē i ōna whakapono, engari ko ngā kōrero tuku iho a te iwi Māori ka mau tonu, ka mau tonu, ka mau tonu. Tuarua ko ngā whakapono o tauwiwi e pā ana ki te iwi Māori, ka pā atu ki te iwi Māori. Koia nei kē te pūtake i hangaia ai ngā waka hourua i ēnei tau ruangahuru i runga i ngā taura tawhito, arā, he whiunga kupu nā Sharp mā, e kī ana, 'kāore e taea e te waka hourua te whakawhiti moana nui, kāore hoki e taea e ngā kaumoana o mua te whakatere waka hourua i te moana nui.'

Nō reira, ka hangaia he waka hourua, ka ako ngā kaumoana i te mahi whakatere waka, kātahi ka whakawhiti i te moana nui. He whāinga tēnā i ngā mahi rite ki ērā a ngā tūpuna Māori i ngā wā o mua. Nā te rahi me te roa o ngā rerenga kua takahia i ngā ruangahuru tau tata nei, kua whakakōmau noa ngā whakapae e kī ana, 'e kore rawa te mahi whakatere waka hourua e taea.'

Ko te whakaaro ka whai tata mai, he aha ngā whakaponotanga i whakaputa nā te tātaritanga i te mahi-ā-ringa whakatere waka hourua. Kua maha ngā whakamārama kua whakaputaina, heoi anō, ka whakarāpopotohia te titiro ki ngā āhuatanga i runga i te moana nui, ki ngā āhuatanga o te waka hourua, ki ngā āhuatanga o ngā kaumoana, ki ngā āhuatanga hoki o te kaiwhakatere me āna mahi whakatere waka hourua.

I te tirohanga ki te pae o waho, ko te atua nui tonu i reira, ko Tāwhiri-mātea. Kei a ia ngā mana whakahaere i runga i te ara moana. Ki te arohaina mai e ōnā whānau puhi ka rere māmā te waka hourua. Ki te whakatariri mai a Tāwhiri-mātea, ka whakawehi ngā kaumoana. Ki te whakato mai a Tāwhiri-mātea, ka nohopuku te waka, ka aro atu rānei ki ngā pae kāore e pai ana.

Ko ngā āhuatanga o te waka a Te Aurere, he manawanui, he tūpakari. He waka kua hangaia i runga i tētehi taurira e taea ai te whakawhiti i te moananui. Ahakoa ngā piki me ngā heke o Ngarunui, te kaha makamaka mai a Marangai, mena ka pupuri ngā kaihoe ki te waka hourua ka whai oranga au rātou. Ahakoa hoki te maha o ngā haumatakataka kua patua a Te Aurere, kāore te waka nei i paku ngawhere, kāore hoki tētehi kaumoana i paku whara. Kua kitea te rangatiratanga o tēnei taurira waka i te ū ki tāna mahi: i ngā wā ka karawhiua mai ngā apū, hōhoro atu te rerenga a te waka nei, engari i aua wā tonu ka raruraru te poti tautoko, ā, i te māio haere o ngā hau ka whakatūngia a Te Aurere kia whanga ai i te poti tautoko. Nō reira, i runga i ngā whakawhitinga moana nui, whēnei ki te ara moana i takahia i te Ūpoko IV, ka kitea he pakari rawa ake ngā waka hourua i ngā poti tautoko.

Ehara te whakawhiti moana nui i te pikiniki, i te wā whakangā, i te hararei rānei. He uaua te takinoho whēnā, me te roa o te mahi, te potopoto o ngā moe, te paruparu o ngā tinana me ngā kākahu, te takeo o ngā kai me te werawera o ngā rā. Koia nā ngā āhuatanga ka pā mai ki ngā kaumoana, engari kia ahatia? He mate kirimoko noa iho. Ara noa atu ngā whakakitenga ātaahua, ngā wā hūmarie, ngā tūtaki-ā-wairua ki ngā atua, ā, he kawenga atu hei taonga hokinga whakaaro. Otirā, i te otinga o te whakawhitinga, kāore rawa i whīroki te āhua o ngā kaumoana, whēnā ki te pikitia pōrewharewha rawa nei ...



Pikitia 5: “The Arrival Of New Zealand Maoris”¹

engari ka whēnei kē te āhua o ngā kaumoana ...



Pikitia 6: Ngā kaumoana a Te Aurere, Pipiri 30, 1995. Mai i te taha mauī, ko Hōri Murray, rātou ko Jack Thatcher, ko Carl Ahlers, ā, ko Ke Ahi Omai i muri atu.

¹ kua whakaaetia e te Auckland City Art Gallery te pikitia nei, “The Arrival Of The Māoris in New Zealand,” nā Steele rāua ko Goldie (1899).

He mahi nui tā te kaiwhakaterere waka hourua. Te rahi o ngā mātauranga ka mau i a ia kia tika rawa ai tāna mahi. Me āta mōhio ia ki ngā whanonga katoa o tōna waka hourua kia māmā ai tāna tirohanga ki te tere o te waka , kia māmā ai tāna tirohanga ki te nuku kōtaha nā te au moana. Me āta mōhio ia ki ngā rerenga a Tamanui-te-Rā, ki ngā rerenga a te marama, ki ngā rerenga a ngā whetū, kia māmā ai tāna kimi aronga, kia māmā hoki ai tāna kimi tūranga. Me āta mōhio ia ki ngā āhuetanga kapua, otirā ki ngā āhuetanga o te rangi whānui kia tika ai āna tohutohu atu ki ngā kaiurungi. Me āta mōhio ia ki te tiro tiro amotai kia māmā ai tāna kimi aronga inā kua ngaro noa atu ērā atu tohu katoa. Me āta mōhio ia ki tētehi huarahi e taea ai e ia te tatau i te tawhiti me te arongo kua takahia kia kore rawa ai te waka e ngaro. Me mōhio hoki ia ki ngā tohutohu whenua kia māmā ai tāna kimi moutere inā ka whakatata atu te waka hourua ki te whenua.

Me māia te kaiwhakaterere waka, he roa nō tāna wā mahi, he poto nō tāna wā moe. Me whakarere e ia ngā whakahaerenga waka katoa kia wātea ai ia ki te mahi i āna ake mahi. Ko tētehi mea nui me whakapono ia ki āna mahi, me whakapono ngā kaumoana me ngā rangatira hoki o te waka ki āna mahi, kia wātea ai ia ki te whakatūtuki i āna mahi whakaterere waka hourua.

Ki te whai katoatia ēnei tikanga, ahakoa ngā kōrero a te pukapuka, ka whakaterere ana te waka whēnā i a Poupaka, “ka waewae kaikapua te rerenga”, “he moana pukepuke ka ekengia”.

Ko te tūmanako, he kawenga kua utaina ki runga i te waka o te kaipānui.

Ka hurihia te ihu o te waka ki uta. Ka kūmea mai, ko tōia mai, ki te urunga, ki te moenga, ki te takotoranga takoto ai.

Āpitianga I

He Kupu Waka Hourua

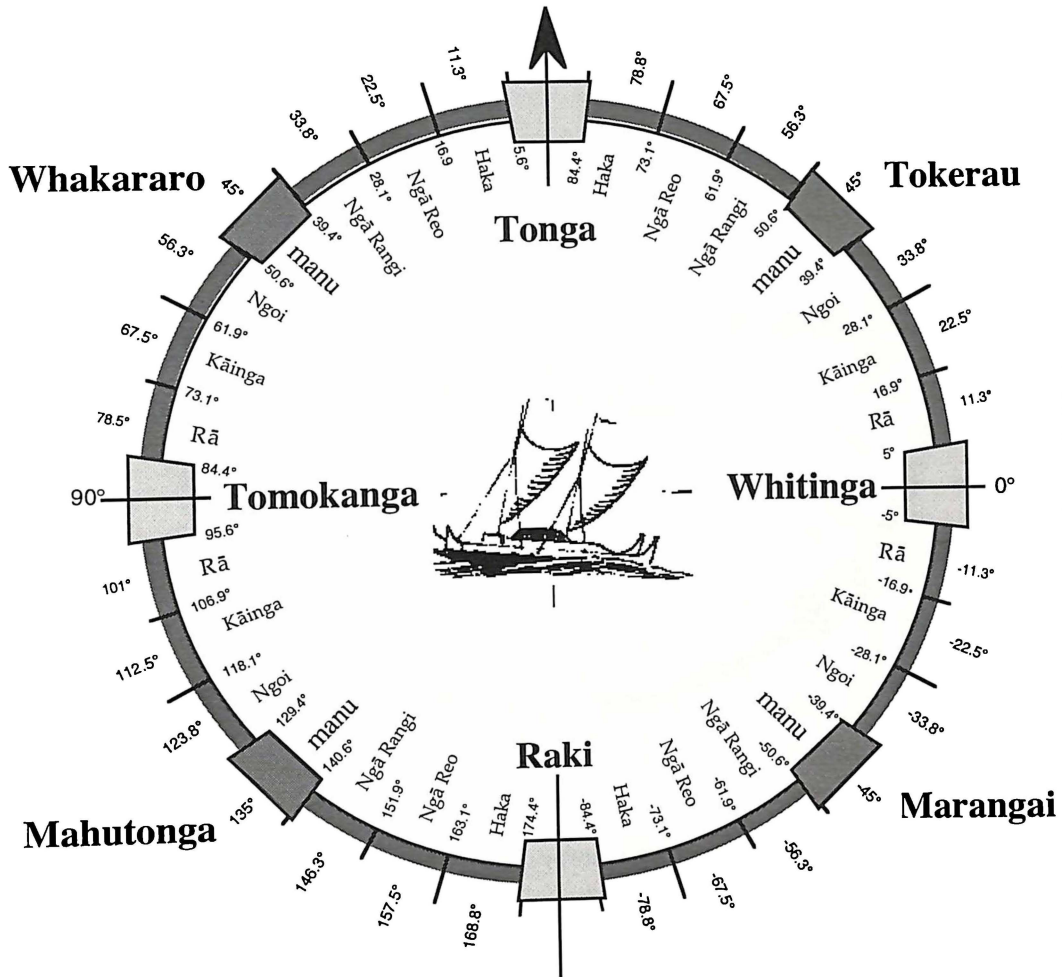
ahipua	fireplace
kahokaho	railing
kaupapa	platform / deck
puhi ariki	wind indicators
pūwhenua	stays
rā matua	main sail
rā ngongo-hau	jib
rā tauaki	mizzen sail
riu	hold
taura kutikuti	tricing lines
taura whakaara	halyards
tiratū	mast
tītoko	boom
tokotū	spar
urungi	steering paddle
urungi piripiri	lee board
waewae	shrouds
waha	sheet lines
whakaheke	sail before the wind
whakakake	beat to windward
whakaripi*	tack

* *Nā Best, (1925)b. Āpitianga I, whārangi 422*

Āpītitanga II

Ngā Nama O Ngā Pae (nā te Kaiwhakaterere)

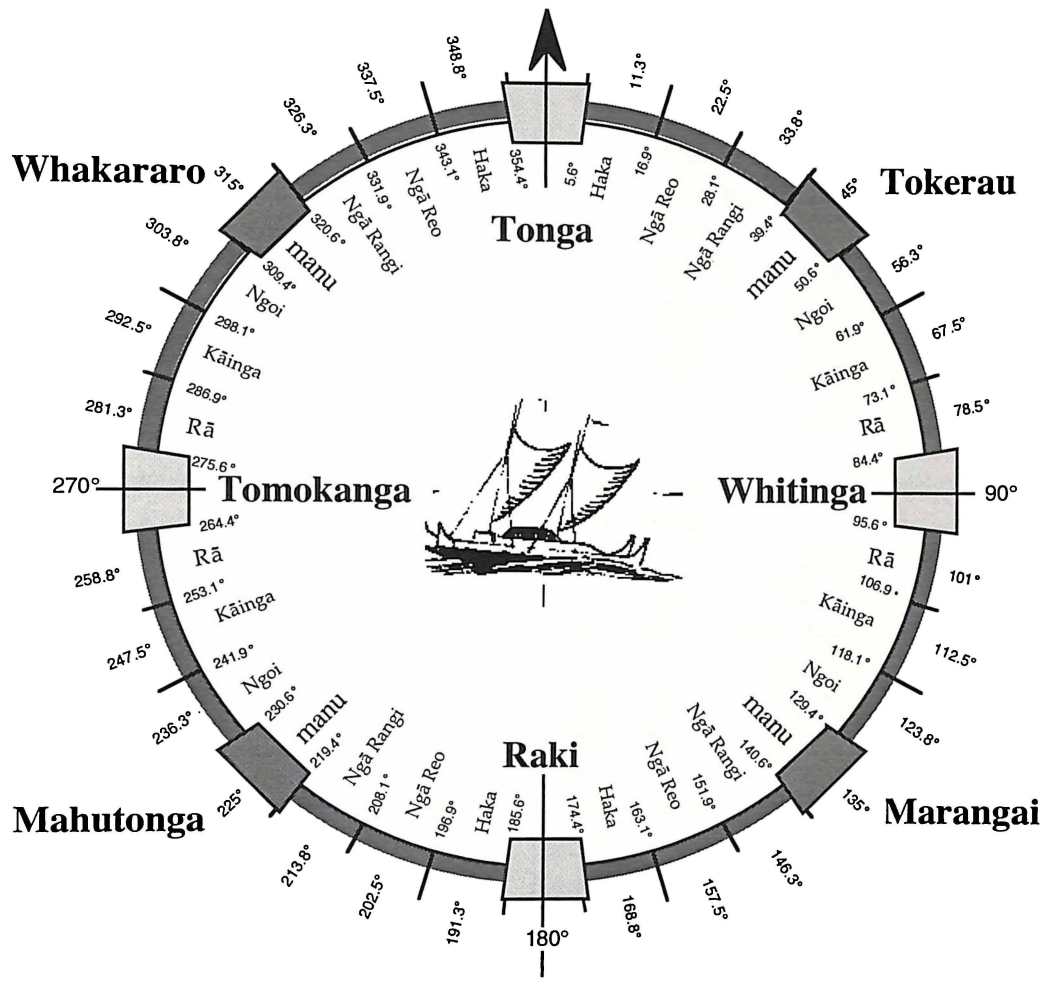
He whakaaturanga tēnei i ngā whare me ngā nama e wehewehe ana ngā pae. Kei te taha Whitinga ngā nama ka maumahara te kaiwhakaterere waka i a ia e tiro tiro ana ki ngā whetū.



Whakaahua 34: Ngā Nama Pae Nā Te Kaiwhakaterere

Ngā Nama O Ngā Pae (nā te Pākehā)

He whakaaturanga tēnei i ngā whare me ngā nama e wehewehe ana ngā pae.
Koia nei ngā nama ka mahia e te Pākehā..



Whakaahua 35: Ngā Nama Pae nā te Pākehā

Āpītitanga III

70 Whetū Nui

E whai ake nei ngā whetū nui ka tirohia e te kaiwhakatere. Kua whiringia ēnei nā ā rātou kaha, me ā rātou wāhi rere i runga i te rangi. Kua whaarārangitia ki te aronga whiti mai. E hāngai ana ngā nama “ ° ” ki te *Whakaahua 34*.

	Ingoa	°	whare	Wāhi Noho
	Polaris	7 89°	Tonga	Ursa Minor
	Cepheus Head	70 78°	Haka	Cepheus
	Cassiopeia	6 65°	Ngā Reo	Cassiopeia, whetū nui o W
	Thuban	47 64°	Ngā Reo	waenga o Polaris me Arcturus
	Aldermin	66 62°	Ngā Reo	Cepheus
	Dubhe	35 62°	Ngā Reo	Ursa Major, wh.rārangi Merak ki NCP
	Caph	2 59°	Ngā Rangi	Cassiopeia, matau o W
	Alioth	42 56°	Ngā Rangi	Ursa Major
	Merak	34 56°	Ngā Rangi	Ursa Major, wha.rārangi Dubhe ki NCP
	Rastaban	57 53°	Ngā Rangi	Draco, ki raro
	Eltanin	60 51°	Ngā Rangi	Draco, taha matau o Rastaban
	Mirfak	11 50°	Manu	Perseus, whakararo o Matariki
	Alkaid	45 49°	Manu	Ursa Major, taha matau
	Capella	15 46°	Manu	whakarārangi a Puanga me te SCP
	North Auriga	20 45°	Manu	raro o Betelgeuse, raro o Sth. Auriga
	Deneb	65 45°	Manu	Cygnus
Whānui	Vega	61 39°	Ngoi	Lyra
	South Auriga	21 38°	Ngoi	waenga Betelgeuse me Nth Auriga
	Cor Caroli	43 38°	Ngoi	Canes Venatici, kotahi te whetū i kōnei
Whakaahu	Castor	26 32°	Ngoi	Gemini, whakarārangi a Procyon te SCP
	Alpheratz	1 29°	Ngoi	matau, raro, tapawhā o Pegasus
	El Nath	16 29°	Ngoi	waenga Capella me Betelgeuse
Mahanga	Pollux	28 28°	Kāinga	Gemini, whakararo o Procyon
	Gemma	53 27°	Kāinga	Corona Borealis, taonga o te karauna
Matariki	Pleiades-M45	12 24°	Kāinga	Taurus
	Hamal	8 23°	Kāinga	Aries, waenga Pegasus me Matariki
Hōkūle'a	Arcturus	50 19°	Kāinga	Bootes
	Muphrid	46 18°	Kāinga	taha maui o Arcturus
	Aldeberan	13 16°	Rā	Taurua, te karu o te pūru
	Markab	69 15°	Rā	Pegasus, taha maui ki runga o tapawhā

	Ingoa	°	whare	Wāhi Noho
	Denebola	36 15°	Rā	Leo, whiore o raiona
	Rasalhague	59 13°	Rā	Ophiuchus
	Regulus	33 12°	Rā	Leo, whetū kaha i kōnei
Poutū-te-Rangi	Altair	63 9°	Rā	Aquila
	Betelgeuse	19 7°	Rā	Orion, te whetū ki raro, taha matau
	Bellatrix	18 6°	Rā	Orion, te whetū ki raro, taha mau
Puanga-hori	Procyon	27 5°	Rā	Canis Minor, taha matau o tapatoru nui
	Menkar	10 4°	Tomokanga	ki runga, taha mau o Matariki
	Mintaka	17 0°	Tomokanga.	Orion, whetū tuatahi o Tautoru (raro)
Puanga	Rigel	14 -08°	Rā	Orion, kei runga i a Tautoru
	Alphard	32 -09°	Rā	Hydra, whetū motuhake
	Spica	44 -11°	Rā	Virgo
	Sabik	56 -16°	Rā	Ophiuchus, taha mau ki raro o Rēhua
	Zubenelgenubi	52 -16°	Rā	taha mau o Libra
Takurua	Sirius	24 -17°	Kāinga	Canis Major
	Gienah	37 -17°	Kāinga	Corvus, whetū nui ki raro o tapawhā
	Mirzam	22 -18°	Kāinga.	taha mau o Takurua
	Diphda	4 -18°	Kāinga	Cetus, (Dheneb Kaitos); waenga Ach/Peg
Rēhua	Antares	54 -26°	Kāinga	te waka o Tama-rēreti
	Nunki	62 -26°	Kāinga	Sagittarius, mea raro o tapawhā
	Adhara	25 -29°	Ngoi	Canis Major, whakarunga o Takurua
	Fomalhaut	68 -30°	Ngoi	Piscis Austrinus, waenga i te SCP/Pegas
	Menkent	49 -36°	Ngoi	Theta Centauri, whakararo i a Hadar
	Shaula	58 -37°	Ngoi	Scorpius, koinga o te Matau a Maui
	Acamar	9 -40°	Manu	River, waenga Archenar / Fornax
	Ankaa	3 -42°	Manu	Phoenix, whetū nui tata ki a Achernar
	Suhail al Wazn	30 -43°	Manu	Vela, whakarārangi a Mia me te SCP
	Al Na'ir	67 -47°	Manu	Grus
	Apex Arrow	40 -49°	Manu	Cent. wha.rārangi Acrux me Gacrux
Atutahi	Canopus	23 -57°	Ngā Rangi	Carina
	Peacock	64 -57°	Ngā Rangi	Pavo
	Gacrux	39 -57°	Ngā Rangi	Crux, whetū "kei runga" i a Māhutonga
	Achernar	5 -57°	Ngā Rangi	whakarārangi Eps. Cent. me te SCP
	Avior	29 -59°	Ngā Rangi	Carina, mea nui o False Cross
	Hadar	48 -60°	Ngā Rangi	tohu 2 ki Māhutonga
	Rigil Kent	51 -61°	Ngā Rangi	tohu 1 (whetū kaha) ki a Māhutonga
	Acrux	38 -63°	Ngā Reo	Crux, whetū nui i te taha o te SCP
	Pair of Muska	41 -68°	Ngā Reo	Muska, takirua kei runga i a Māhutonga
	Atria	55 -69°	Ngā Reo	Triangulum, taha matau o tapatoru
	Miaplacidus	31 -70°	Ngā Reo	Carina, whetū kaha o Diamond Cross

Rārangi 3: 70 Whetū Nui

70 Whetū Nui

E ōrite ana ēnei whetū ki ngā whetū i te rārangi i mua, heoi anō, kua whakarārangitia kētia ēnei ki ā rātou wāhi noho i runga i te rangi. Ki te ako te tangata i ngā whetū e māmā ake te ako mai i tēnei rarangi, nā te mea, ka noho tata tētehi whetū ki tētehi.

E hāngai ana ngā nama “ ° ” ki te *Whakaahua 34*.

	Ingoa	°	whare	Wāhi Noho
	Alpheratz	1 29°	Ngoi	matau, raro, tapawhā o Pegasus
	Caph	2 59°	Ngā Rangi	Cassiopeia, matau o W
	Ankaa	3 -42°	Manu	Phoenix, whetū nui tata ki a Achernar
	Diphda	4 -18°	Kāinga	Cetus, (Dheneb Kaitos);waenga Ach/Peg
	Achernar	5 -57°	Ngā Rangi	whakarārangi Eps. Cent. me te SCP
	Cassiopeia	6 65°	Ngā Reo	Cassiopeia, whetū nui o W
	Polaris	7 89°	Tonga	Ursa Minor
	Hamal	8 23°	Kāinga	Aries, waenga Pegasus me Matariki
	Acamar	9 -40°	Manu	River, waenga Archenar / Fornax
	Menkar	10 4°	Tomokanga	ki runga, taha mauī o Matariki
	Mirfak	11 50°	Manu	Perseus, whakararo o Matariki
Matariki	Pleiades-M45	12 24°	Kāinga	Taurus
	Aldeberan	13 16°	Rā	Taurua, te karu o te pūru
Puanga	Rigel	14 -08°	Rā	Orion, kei runga i a Tautoru
	Capella	15 46°	Manu	whakarārangi a Puanga me te SCP
	El Nath	16 29°	Ngoi	waenga Capella me Betelgeuse
	Mintaka	17 0°	Tomokanga.	Orion, whetū tuatahi o Tautoru (raro)
	Bellatrix	18 6°	Rā	Orion, te whetū ki raro, taha mauī
	Betelgeuse	19 7°	Rā	Orion, te whetū ki raro, taha matau
	North Auriga	20 45°	Manu	raro o Betelgeuse, raro o Sth. Auriga
	South Auriga	21 38°	Ngoi	waenga Betelgeuse me Nth Auriga
	Mirzam	22 -18°	Kāinga.	taha mauī o Takurua
Atutahi	Canopus	23 -57°	Ngā Rangi	Carina
Takurua	Sirius	24 -17°	Kāinga	Canis Major
	Adhara	25 -29°	Ngoi	Canis Major, whakarunga o Takurua
Whakaahu	Castor	26 32°	Ngoi	Gemini, whakarārangi a Procyon te SCP
Puanga-hori	Procyon	27 5°	Rā	Canis Minor, taha matau o tapatoru nui
Mahanga	Pollux	28 28°	Kāinga	Gemini, whakararo o Procyon
	Avior	29 -59°	Ngā Rangi	Carina, mea nui o False Cross
	Suhail al Wazn	30 -43°	Manu	Vela, whakarārangi a Mia me te SCP

	Ingoa	°	whare	Wāhi Noho
	Miaplacidus	31 -70°	Ngā Reo	Carina, whetū kaha o Diamond Cross
	Alphard	32 -09°	Rā	Hydra, whetū motuhake
	Regulus	33 12°	Rā	Leo, whetū kaha i kōnei
	Merak	34 56°	Ngā Rangi	Ursa Major, wha.rārangi Dubhe ki NCP
	Dubhe	35 62°	Ngā Reo	Ursa Major, wh.rārangi Merak ki NCP
	Denebola	36 15°	Rā	Leo, whiore o raiona
	Gienah	37 -17°	Kāinga	Corvus, whetū nui ki raro o tapawhā
	Acrux	38 -63°	Ngā Reo	Crux, whetū nui i te taha o te SCP
	Gacrux	39 -57°	Ngā Rangi	Crux, whetū "kei runga" i a Māhutonga
	Apex Arrow	40 -49°	Manu	Cent. wha.rārangi Acrux me Gacrux
	Pair of Muska	41 -68°	Ngā Reo	Muska, takirua kei runga i a Māhutonga
	Alioth	42 56°	Ngā Rangi	Ursa Major
	Cor Caroli	43 38°	Ngoi	Canes Venatici, kotahi te whetū i kōnei
	Spica	44 -11°	Rā	Virgo
	Alkaid	45 49°	Manu	Ursa Major, taha matau
	Muphrid	46 18°	Kāinga	taha mau i o Arcturus
	Thuban	47 64°	Ngā Reo	waenga o Polaris me Arcturus
	Hadar	48 -60°	Ngā Rangi	tohu 2 ki Māhutonga
	Menkent	49 -36°	Ngoi	Theta Centauri, whakararo i a Hadar
Hökūle'a	Arcturus	50 19°	Kāinga	Bootes
	Rigil Kent	51 -61°	Ngā Rangi	tohu 1 (whetū kaha) ki a Māhutonga
	Zubenelgenubi	52 -16°	Rā	taha mau i o Libra
	Gemma	53 27°	Kāinga	Corona Borealis, taonga o te karauna
Rēhua	Antares	54 -26°	Kāinga	te waka o Tama-rēreti
	Atria	55 -69°	Ngā Reo	Triangulum, taha matau o tapatoru
	Sabik	56 -16°	Rā	Ophiuchus, taha mau i ki raro o Rēhua
	Rastaban	57 53°	Ngā Rangi	Draco, ki raro
	Shaula	58 -37°	Ngoi	Scorpius, koinga o te Matau a Maui
	Rasalhague	59 13°	Rā	Ophiuchus
	Eltanin	60 51°	Ngā Rangi	Draco, taha matau o Rastaban
Whānui	Vega	61 39°	Ngoi	Lyra
	Nunki	62 -26°	Kāinga	Sagittarius, mea raro o tapawhā
Poutū-te-Rangi	Altair	63 9°	Rā	Aquila
	Peacock	64 -57°	Ngā Rangi	Pavo
	Deneb	65 45°	Manu	Cygnus
	Aldermin	66 62°	Ngā Reo	Cepheus
	Al Na'ir	67 -47°	Manu	Grus
	Fomalhaut	68 -30°	Ngoi	Piscis Austrinus, waenga i te SCP/Pegas
	Markab	69 15°	Rā	Pegasus, taha mau i ki runga o tapawhā
	Cepheus Head	70 78°	Haka	Cepheus

Rārangi 4: 70 Whetū Nui anō

Āpitianga IV

Ētehi Rerenga a Te Whānau Marama

E whai ake nei ētehi wā me ētehi pae i tō ai i ētehi o te Whānau Mārama, i te tau 1995. Ko te wāhi tū mō ngā tirohanga nei, ko te paenga waenganui o te ao (0 00.0 N, 156 00.0 W), ā, kei a Aotearoa te wā, arā UT-10 (kei Greenwich - 10 hāora). Kei te *Whakaahua 36* ngā nama " ° ".

Ko te rerenga a Tamanui-te-Rā, i te tuatahi, kātahi ko te marama, ko Kōpū, ko Pareārau, ko Takurua, ko Poutū-te-Rangi. Ki te āta tirohia e koe ngā wā me ngā pae nei, ka kite he rereke ngā rerenga a te Rā, ki tā te marama rerenga, ki te tā whetū rerenga, ki tā te whetū ao rerenga.

Ko ngā kōrero whetū katoa i te Āpitianga nei, otirā i ngā Āpitianga nei he mea tiki i te pūmanawa rorohiko o ICE (tirohia te rārangi pūmanawa rorohiko).

Tamanui-te-Rā i te tau 1995

Rā	Whiti h m °	Tō h m °	Rā	Whiti h m °	Tō h m °	Rā	Whiti h m °	Tō h m °
Kohi. 1	6 24 (113)	18 31 (247)	Kohi. 26	6 33 (109)	18 40 (251)	Hui. 20	6 34 (101)	18 41 (259)
Kohi. 2	6 24 (113)	18 32 (247)	Kohi. 27	6 33 (108)	18 40 (252)	Hui. 21	6 34 (101)	18 41 (260)
Kohi. 3	6 25 (113)	18 32 (247)	Kohi. 28	6 33 (108)	18 41 (252)	Hui. 22	6 34 (100)	18 41 (260)
Kohi. 4	6 25 (113)	18 33 (247)	Kohi. 29	6 34 (108)	18 41 (252)	Hui. 23	6 34 (100)	18 41 (260)
Kohi. 5	6 26 (113)	18 33 (247)	Kohi. 30	6 34 (108)	18 41 (252)	Hui. 24	6 34 (99)	18 41 (261)
Kohi. 6	6 26 (112)	18 34 (248)	Kohi. 31	6 34 (107)	18 41 (253)	Hui. 25	6 34 (99)	18 40 (261)
Kohi. 7	6 27 (112)	18 34 (248)	Hui. 1	6 34 (107)	18 41 (253)	Hui. 26	6 34 (99)	18 40 (261)
Kohi. 8	6 27 (112)	18 34 (248)	Hui. 2	6 34 (107)	18 41 (253)	Hui. 27	6 33 (98)	18 40 (262)
Kohi. 9	6 27 (112)	18 35 (248)	Hui. 3	6 34 (107)	18 41 (254)	Hui. 28	6 33 (98)	18 40 (262)
Kohi. 10	6 28 (112)	18 35 (248)	Hui. 4	6 34 (106)	18 41 (254)	Poutū. 1	6 33 (98)	18 40 (263)
Kohi. 11	6 28 (112)	18 36 (248)	Hui. 5	6 35 (106)	18 42 (254)	Poutū. 2	6 33 (97)	18 39 (263)
Kohi. 12	6 29 (112)	18 36 (248)	Hui. 6	6 35 (106)	18 42 (255)	Poutū. 3	6 33 (97)	18 39 (263)
Kohi. 13	6 29 (111)	18 36 (249)	Hui. 7	6 35 (105)	18 42 (255)	Poutū. 4	6 32 (96)	18 39 (264)
Kohi. 14	6 29 (111)	18 37 (249)	Hui. 8	6 35 (105)	18 42 (255)	Poutū. 5	6 32 (96)	18 39 (264)
Kohi. 15	6 30 (111)	18 37 (249)	Hui. 9	6 35 (105)	18 42 (255)	Poutū. 6	6 32 (96)	18 39 (265)
Kohi. 16	6 30 (111)	18 37 (249)	Hui. 10	6 35 (104)	18 42 (256)	Poutū. 7	6 32 (95)	18 38 (265)
Kohi. 17	6 30 (111)	18 38 (249)	Hui. 11	6 35 (104)	18 42 (256)	Poutū. 8	6 32 (95)	18 38 (265)
Kohi. 18	6 31 (111)	18 38 (250)	Hui. 12	6 35 (104)	18 42 (256)	Poutū. 9	6 31 (94)	18 38 (266)
Kohi. 19	6 31 (110)	18 38 (250)	Hui. 13	6 35 (103)	18 42 (257)	Poutū. 10	6 31 (94)	18 38 (266)
Kohi. 20	6 31 (110)	18 39 (250)	Hui. 14	6 35 (103)	18 42 (257)	Poutū. 11	6 31 (94)	18 37 (266)
Kohi. 21	6 32 (110)	18 39 (250)	Hui. 15	6 35 (103)	18 42 (257)	Poutū. 12	6 31 (93)	18 37 (267)
Kohi. 22	6 32 (110)	18 39 (250)	Hui. 16	6 35 (102)	18 41 (258)	Poutū. 13	6 30 (93)	18 37 (267)
Kohi. 23	6 32 (109)	18 39 (251)	Hui. 17	6 35 (102)	18 41 (258)	Poutū. 14	6 30 (93)	18 36 (268)
Kohi. 24	6 33 (109)	18 40 (251)	Hui. 18	6 35 (102)	18 41 (259)	Poutū. 15	6 30 (92)	18 36 (268)
Kohi. 25	6 33 (109)	18 40 (251)	Hui. 19	6 34 (101)	18 41 (259)	Poutū. 16	6 29 (92)	18 36 (268)

Rā	Whiti		Tō	Rā	Whiti		Tō	Rā	Whiti		Tō			
	h	m °	h m °		h	m °	h m °		h	m °	h m °			
Poutū. 17	6 29	(91)	18 36	(269)	Hara. 25	6 17	(69)	18 24	(291)	Here. 2	6 27	(72)	18 34	(288)
Poutū. 18	6 29	(91)	18 35	(269)	Hara. 26	6 17	(69)	18 25	(291)	Here. 3	6 27	(72)	18 34	(287)
Poutū. 19	6 29	(91)	18 35	(270)	Hara. 27	6 18	(69)	18 25	(291)	Here. 4	6 27	(73)	18 34	(287)
Poutū. 20	6 28	(90)	18 35	(270)	Hara. 28	6 18	(69)	18 25	(292)	Here. 5	6 27	(73)	18 33	(287)
Poutū. 21	6 28	(90)	18 34	(270)	Hara. 29	6 18	(68)	18 25	(292)	Here. 6	6 26	(73)	18 33	(287)
Poutū. 22	6 28	(89)	18 34	(271)	Hara. 30	6 18	(68)	18 25	(292)	Here. 7	6 26	(74)	18 33	(286)
Poutū. 23	6 27	(89)	18 34	(271)	Hara. 31	6 18	(68)	18 25	(292)	Here. 8	6 26	(74)	18 33	(286)
Poutū. 24	6 27	(89)	18 34	(272)	Pipi. 1	6 18	(68)	18 25	(292)	Here. 9	6 26	(74)	18 33	(286)
Poutū. 25	6 27	(88)	18 33	(272)	Pipi. 2	6 18	(68)	18 26	(292)	Here. 10	6 26	(74)	18 33	(285)
Poutū. 26	6 26	(88)	18 33	(272)	Pipi. 3	6 19	(68)	18 26	(292)	Here. 11	6 26	(75)	18 33	(285)
Poutū. 27	6 26	(87)	18 33	(273)	Pipi. 4	6 19	(68)	18 26	(292)	Here. 12	6 26	(75)	18 32	(285)
Poutū. 28	6 26	(87)	18 32	(273)	Pipi. 5	6 19	(67)	18 26	(293)	Here. 13	6 25	(75)	18 32	(285)
Poutū. 29	6 26	(87)	18 32	(274)	Pipi. 6	6 19	(67)	18 26	(293)	Here. 14	6 25	(76)	18 32	(284)
Poutū. 30	6 25	(86)	18 32	(274)	Pipi. 7	6 19	(67)	18 26	(293)	Here. 15	6 25	(76)	18 32	(284)
Poutū. 31	6 25	(86)	18 31	(274)	Pipi. 8	6 19	(67)	18 27	(293)	Here. 16	6 25	(76)	18 32	(284)
Pae. 1	6 25	(85)	18 31	(275)	Pipi. 9	6 20	(67)	18 27	(293)	Here. 17	6 25	(77)	18 31	(283)
Pae. 2	6 24	(85)	18 31	(275)	Pipi. 10	6 20	(67)	18 27	(293)	Here. 18	6 24	(77)	18 31	(283)
Pae. 3	6 24	(85)	18 31	(276)	Pipi. 11	6 20	(67)	18 27	(293)	Here. 19	6 24	(77)	18 31	(283)
Pae. 4	6 24	(84)	18 30	(276)	Pipi. 12	6 20	(67)	18 27	(293)	Here. 20	6 24	(78)	18 31	(282)
Pae. 5	6 23	(84)	18 30	(276)	Pipi. 13	6 20	(67)	18 28	(293)	Here. 21	6 24	(78)	18 30	(282)
Pae. 6	6 23	(84)	18 30	(277)	Pipi. 14	6 21	(67)	18 28	(293)	Here. 22	6 24	(78)	18 30	(282)
Pae. 7	6 23	(83)	18 29	(277)	Pipi. 15	6 21	(67)	18 28	(293)	Here. 23	6 23	(79)	18 30	(281)
Pae. 8	6 23	(83)	18 29	(277)	Pipi. 16	6 21	(67)	18 28	(293)	Here. 24	6 23	(79)	18 30	(281)
Pae. 9	6 22	(82)	18 29	(278)	Pipi. 17	6 21	(67)	18 29	(293)	Here. 25	6 23	(79)	18 29	(281)
Pae. 10	6 22	(82)	18 29	(278)	Pipi. 18	6 21	(67)	18 29	(293)	Here. 26	6 22	(80)	18 29	(280)
Pae. 11	6 22	(82)	18 28	(278)	Pipi. 19	6 22	(67)	18 29	(293)	Here. 27	6 22	(80)	18 29	(280)
Pae. 12	6 22	(81)	18 28	(279)	Pipi. 20	6 22	(67)	18 29	(293)	Here. 28	6 22	(80)	18 28	(280)
Pae. 13	6 21	(81)	18 28	(279)	Pipi. 21	6 22	(67)	18 29	(293)	Here. 29	6 22	(81)	18 28	(279)
Pae. 14	6 21	(81)	18 28	(280)	Pipi. 22	6 22	(67)	18 30	(293)	Here. 30	6 21	(81)	18 28	(279)
Pae. 15	6 21	(80)	18 27	(280)	Pipi. 23	6 23	(67)	18 30	(293)	Here. 31	6 21	(81)	18 28	(278)
Pae. 16	6 20	(80)	18 27	(280)	Pipi. 24	6 23	(67)	18 30	(293)	Mahu. 1	6 21	(82)	18 27	(278)
Pae. 17	6 20	(80)	18 27	(281)	Pipi. 25	6 23	(67)	18 30	(293)	Mahu. 2	6 20	(82)	18 27	(278)
Pae. 18	6 20	(79)	18 27	(281)	Pipi. 26	6 23	(67)	18 30	(293)	Mahu. 3	6 20	(82)	18 27	(277)
Pae. 19	6 20	(79)	18 26	(281)	Pipi. 27	6 23	(67)	18 31	(293)	Mahu. 4	6 20	(83)	18 26	(277)
Pae. 20	6 20	(78)	18 26	(282)	Pipi. 28	6 24	(67)	18 31	(293)	Mahu. 5	6 19	(83)	18 26	(277)
Pae. 21	6 19	(78)	18 26	(282)	Pipi. 29	6 24	(67)	18 31	(293)	Mahu. 6	6 19	(84)	18 26	(276)
Pae. 22	6 19	(78)	18 26	(282)	Pipi. 30	6 24	(67)	18 31	(293)	Mahu. 7	6 19	(84)	18 25	(276)
Pae. 23	6 19	(77)	18 26	(283)	Hōngo. 1	6 24	(67)	18 31	(293)	Mahu. 8	6 18	(84)	18 25	(276)
Pae. 24	6 19	(77)	18 25	(283)	Hōngo. 2	6 24	(67)	18 32	(293)	Mahu. 9	6 18	(85)	18 25	(275)
Pae. 25	6 19	(77)	18 25	(283)	Hōngo. 3	6 25	(67)	18 32	(293)	Mahu. 10	6 18	(85)	18 24	(275)
Pae. 26	6 18	(76)	18 25	(284)	Hōngo. 4	6 25	(67)	18 32	(293)	Mahu. 11	6 17	(85)	18 24	(274)
Pae. 27	6 18	(76)	18 25	(284)	Hōngo. 5	6 25	(67)	18 32	(293)	Mahu. 12	6 17	(86)	18 23	(274)
Pae. 28	6 18	(76)	18 25	(284)	Hōngo. 6	6 25	(67)	18 32	(293)	Mahu. 13	6 17	(86)	18 23	(274)
Pae. 29	6 18	(76)	18 25	(285)	Hōngo. 7	6 25	(67)	18 33	(293)	Mahu. 14	6 16	(87)	18 23	(273)
Pae. 30	6 18	(75)	18 25	(285)	Hōngo. 8	6 25	(68)	18 33	(292)	Mahu. 15	6 16	(87)	18 22	(273)
Hara. 1	6 18	(75)	18 25	(285)	Hōngo. 9	6 26	(68)	18 33	(292)	Mahu. 16	6 16	(87)	18 22	(272)
Hara. 2	6 18	(75)	18 24	(286)	Hōngo. 10	6 26	(68)	18 33	(292)	Mahu. 17	6 15	(88)	18 22	(272)
Hara. 3	6 17	(74)	18 24	(286)	Hōngo. 11	6 26	(68)	18 33	(292)	Mahu. 18	6 15	(88)	18 21	(272)
Hara. 4	6 17	(74)	18 24	(286)	Hōngo. 12	6 26	(68)	18 33	(292)	Mahu. 19	6 15	(89)	18 21	(271)
Hara. 5	6 17	(74)	18 24	(286)	Hōngo. 13	6 26	(68)	18 33	(292)	Mahu. 20	6 14	(89)	18 21	(271)
Hara. 6	6 17	(73)	18 24	(287)	Hōngo. 14	6 26	(68)	18 33	(292)	Mahu. 21	6 14	(89)	18 20	(271)
Hara. 7	6 17	(73)	18 24	(287)	Hōngo. 15	6 26	(68)	18 34	(291)	Mahu. 22	6 13	(90)	18 20	(270)
Hara. 8	6 17	(73)	18 24	(287)	Hōngo. 16	6 26	(69)	18 34	(291)	Mahu. 23	6 13	(90)	18 20	(270)
Hara. 9	6 17	(73)	18 24	(287)	Hōngo. 17	6 27	(69)	18 34	(291)	Mahu. 24	6 13	(90)	18 19	(269)
Hara. 10	6 17	(72)	18 24	(288)	Hōngo. 18	6 27	(69)	18 34	(291)	Mahu. 25	6 12	(91)	18 19	(269)
Hara. 11	6 17	(72)	18 24	(288)	Hōngo. 19	6 27	(69)	18 34	(291)	Mahu. 26	6 12	(91)	18 19	(269)
Hara. 12	6 17	(72)	18 24	(288)	Hōngo. 20	6 27	(69)	18 34	(291)	Mahu. 27	6 12	(92)	18 18	(268)
Hara. 13	6 17	(72)	18 24	(289)	Hōngo. 21	6 27	(70)	18 34	(290)	Mahu. 28	6 11	(92)	18 18	(268)
Hara. 14	6 17	(71)	18 24	(289)	Hōngo. 22	6 27	(70)	18 34	(290)	Mahu. 29	6 11	(92)	18 18	(267)
Hara. 15	6 17	(71)	18 24	(289)	Hōngo. 23	6 27	(70)	18 34	(290)	Mahu. 30	6 11	(93)	18 17	(267)
Hara. 16	6 17	(71)	18 24	(289)	Hōngo. 24	6 27	(70)	18 34	(290)	Wh.Nu. 1	6 10	(93)	18 17	(267)
Hara. 17	6 17	(71)	18 24	(289)	Hōngo. 25	6 27	(70)	18 34	(290)	Wh.Nu. 2	6 10	(94)	18 17	(266)
Hara. 18	6 17	(70)	18 24	(290)	Hōngo. 26	6 27	(71)	18 34	(289)	Wh.Nu. 3	6 10	(94)	18 16	(266)
Hara. 19	6 17	(70)	18 24	(290)	Hōngo. 27	6 27	(71)	18 34	(289)	Wh.Nu. 4	6 09	(94)	18 16	(265)
Hara. 20	6 17	(70)	18 24	(290)	Hōngo. 28	6 27	(71)	18 34	(289)	Wh.Nu. 5	6 09	(95)	18 16	(265)
Hara. 21	6 17	(70)	18 24	(290)	Hōngo. 29	6 27	(71)	18 34	(289)	Wh.Nu. 6	6 09	(95)	18 15	(265)
Hara. 22	6 17	(70)	18 24	(290)	Hōngo. 30	6 27	(71)	18 34	(288)	Wh.Nu. 7	6 09	(95)	18 15	(264)
Hara. 23	6 17	(69)	18 24	(291)	Hōngo. 31	6 27	(72)	18 34	(288)	Wh.Nu. 8	6 08	(96)	18 15	(264)
Hara. 24	6 17	(69)	18 24	(291)	Here. 1	6 27	(72)	18 34	(288)	Wh.Nu. 9	6 08	(96)	18 15	(264)

Rā	Whiti		Tō	Rā	Whiti		Tō
	h	m °	h m °		h m °	h m °	
Wh.Nu. 10	6 08	(97)	18 14 (263)	Haki. 18	6 17 (113)	18 24 (247)	
Wh.Nu. 11	6 07	(97)	18 14 (263)	Haki. 19	6 17 (113)	18 25 (247)	
Wh.Nu. 12	6 07	(97)	18 14 (262)	Haki. 20	6 18 (113)	18 25 (247)	
Wh.Nu. 13	6 07	(98)	18 14 (262)	Haki. 21	6 18 (113)	18 26 (247)	
Wh.Nu. 14	6 07	(98)	18 13 (262)	Haki. 22	6 19 (113)	18 26 (247)	
Wh.Nu. 15	6 06	(99)	18 13 (261)	Haki. 23	6 19 (113)	18 27 (247)	
Wh.Nu. 16	6 06	(99)	18 13 (261)	Haki. 24	6 20 (113)	18 27 (247)	
Wh.Nu. 17	6 06	(99)	18 13 (261)	Haki. 25	6 20 (113)	18 28 (247)	
Wh.Nu. 18	6 06	(100)	18 12 (260)	Haki. 26	6 21 (113)	18 28 (247)	
Wh.Nu. 19	6 06	(100)	18 12 (260)	Haki. 27	6 21 (113)	18 29 (247)	
Wh.Nu. 20	6 05	(100)	18 12 (259)	Haki. 28	6 22 (113)	18 29 (247)	
Wh.Nu. 21	6 05	(101)	18 12 (259)	Haki. 29	6 22 (113)	18 30 (247)	
Wh.Nu. 22	6 05	(101)	18 12 (259)	Haki. 30	6 23 (113)	18 30 (247)	
Wh.Nu. 23	6 05	(101)	18 12 (258)	Haki. 31	6 23 (113)	18 31 (247)	
Wh.Nu. 24	6 05	(102)	18 12 (258)				
Wh.Nu. 25	6 05	(102)	18 11 (258)				
Wh.Nu. 26	6 05	(102)	18 11 (257)				
Wh.Nu. 27	6 04	(103)	18 11 (257)				
Wh.Nu. 28	6 04	(103)	18 11 (257)				
Wh.Nu. 29	6 04	(103)	18 11 (256)				
Wh.Nu. 30	6 04	(104)	18 11 (256)				
Wh.Nu. 31	6 04	(104)	18 11 (256)				
Wh.Ra. 1	6 04	(104)	18 11 (255)				
Wh.Ra. 2	6 04	(105)	18 11 (255)				
Wh.Ra. 3	6 04	(105)	18 11 (255)				
Wh.Ra. 4	6 04	(105)	18 11 (254)				
Wh.Ra. 5	6 04	(106)	18 11 (254)				
Wh.Ra. 6	6 04	(106)	18 11 (254)				
Wh.Ra. 7	6 04	(106)	18 11 (254)				
Wh.Ra. 8	6 04	(107)	18 11 (253)				
Wh.Ra. 9	6 04	(107)	18 11 (253)				
Wh.Ra. 10	6 04	(107)	18 11 (253)				
Wh.Ra. 11	6 05	(107)	18 12 (252)				
Wh.Ra. 12	6 05	(108)	18 12 (252)				
Wh.Ra. 13	6 05	(108)	18 12 (252)				
Wh.Ra. 14	6 05	(108)	18 12 (252)				
Wh.Ra. 15	6 05	(108)	18 12 (251)				
Wh.Ra. 16	6 05	(109)	18 12 (251)				
Wh.Ra. 17	6 05	(109)	18 13 (251)				
Wh.Ra. 18	6 06	(109)	18 13 (251)				
Wh.Ra. 19	6 06	(109)	18 13 (250)				
Wh.Ra. 20	6 06	(110)	18 13 (250)				
Wh.Ra. 21	6 06	(110)	18 13 (250)				
Wh.Ra. 22	6 07	(110)	18 14 (250)				
Wh.Ra. 23	6 07	(110)	18 14 (250)				
Wh.Ra. 24	6 07	(111)	18 14 (249)				
Wh.Ra. 25	6 07	(111)	18 15 (249)				
Wh.Ra. 26	6 08	(111)	18 15 (249)				
Wh.Ra. 27	6 08	(111)	18 15 (249)				
Wh.Ra. 28	6 08	(111)	18 16 (249)				
Wh.Ra. 29	6 09	(111)	18 16 (248)				
Wh.Ra. 30	6 09	(112)	18 16 (248)				
Haki. 1	6 09	(112)	18 17 (248)				
Haki. 2	6 10	(112)	18 17 (248)				
Haki. 3	6 10	(112)	18 18 (248)				
Haki. 4	6 11	(112)	18 18 (248)				
Haki. 5	6 11	(112)	18 18 (248)				
Haki. 6	6 11	(112)	18 19 (247)				
Haki. 7	6 12	(113)	18 19 (247)				
Haki. 8	6 12	(113)	18 20 (247)				
Haki. 9	6 13	(113)	18 20 (247)				
Haki. 10	6 13	(113)	18 21 (247)				
Haki. 11	6 14	(113)	18 21 (247)				
Haki. 12	6 14	(113)	18 21 (247)				
Haki. 13	6 14	(113)	18 22 (247)				
Haki. 14	6 15	(113)	18 22 (247)				
Haki. 15	6 15	(113)	18 23 (247)				
Haki. 16	6 16	(113)	18 23 (247)				
Haki. 17	6 16	(113)	18 24 (247)				

Rārangi 5: Tamanui-te-Rā

Te Marama i te tau 1995

Rā	Whiti h m °	Tō h m °	Rā	Whiti h m °	Tō h m °	Rā	Whiti h m °	Tō h m °
Kohi. 1	6 40 (108)	19 08 (253)	Poutū. 4	8 59 (80)	21 21 (282)	Hara. 5	11 03 (73)	23 25 (285)
Kohi. 2	7 39 (105)	20 05 (256)	Poutū. 5	9 45 (77)	22 07 (285)	Hara. 6	11 50 (76)	f 0 12 (282)
Kohi. 3	8 33 (102)	20 58 (260)	Poutū. 6	10 31 (74)	22 54 (287)	Hara. 7	12 36 (79)	f 0 58 (279)
Kohi. 4	9 25 (97)	21 48 (265)	Poutū. 7	11 18 (72)	23 41 (289)	Hara. 8	13 23 (83)	f 1 45 (275)
Kohi. 5	10 13 (93)	22 35 (269)	Poutū. 8	12 05 (71)	f 0 28 (290)	Hara. 9	14 10 (88)	f 2 33 (270)
Kohi. 6	10 59 (88)	23 21 (274)	Poutū. 9	12 53 (70)	f 1 16 (289)	Hara. 10	14 59 (92)	f 3 23 (265)
Kohi. 7	11 44 (84)	f 0 05 (278)	Poutū. 10	13 41 (71)	f 2 05 (288)	Hara. 11	15 50 (97)	f 4 15 (261)
Kohi. 8	12 28 (80)	f 0 50 (282)	Poutū. 11	14 30 (73)	f 2 53 (286)	Hara. 12	16 44 (101)	f 5 11 (257)
Kohi. 9	13 13 (77)	f 1 34 (285)	Poutū. 12	15 18 (75)	f 3 41 (283)	Hara. 13	17 42 (105)	f 6 10 (253)
Kohi. 10	13 58 (74)	f 2 20 (287)	Poutū. 13	16 06 (79)	f 4 30 (279)	Hara. 15	p18 42 (108)	7 12 (251)
Kohi. 11	14 44 (72)	f 3 07 (289)	Poutū. 14	16 55 (83)	f 5 19 (275)	Hara. 16	p19 45 (109)	8 14 (251)
Kohi. 12	15 32 (70)	f 3 55 (290)	Poutū. 15	17 44 (87)	f 6 08 (270)	Hara. 17	p20 47 (109)	9 16 (251)
Kohi. 13	16 20 (70)	f 4 44 (290)	Poutū. 17	p18 35 (92)	6 59 (266)	Hara. 18	p21 47 (108)	10 15 (254)
Kohi. 14	17 09 (71)	f 5 33 (289)	Poutū. 18	p19 26 (97)	7 51 (261)	Hara. 19	p22 45 (105)	11 11 (257)
Kohi. 15	17 58 (72)	f 6 21 (287)	Poutū. 19	p20 20 (101)	8 46 (257)	Hara. 20	p23 38 (101)	12 03 (261)
Kohi. 17	p18 47 (75)	7 10 (284)	Poutū. 20	p21 15 (105)	9 42 (254)	Hara. 21	0 29 (97)	12 52 (265)
Kohi. 18	p19 35 (78)	7 58 (280)	Poutū. 21	p22 13 (108)	10 40 (251)	Hara. 22	1 17 (93)	13 39 (269)
Kohi. 19	p20 22 (82)	8 45 (276)	Poutū. 22	p23 11 (109)	11 39 (251)	Hara. 23	2 03 (88)	14 24 (274)
Kohi. 20	p21 10 (86)	9 32 (271)	Poutū. 23	0 09 (109)	12 36 (252)	Hara. 24	2 48 (84)	15 09 (278)
Kohi. 21	p21 58 (91)	10 21 (267)	Poutū. 24	1 07 (108)	13 33 (253)	Hara. 25	3 32 (80)	15 54 (281)
Kohi. 22	p22 46 (96)	11 10 (262)	Poutū. 25	2 02 (106)	14 27 (256)	Hara. 26	4 18 (77)	16 40 (285)
Kohi. 23	p23 37 (100)	12 02 (258)	Poutū. 26	2 55 (103)	15 19 (259)	Hara. 27	5 03 (74)	17 26 (287)
Kohi. 24	0 30 (104)	12 56 (254)	Poutū. 27	3 45 (99)	16 09 (263)	Hara. 28	5 50 (72)	18 13 (289)
Kohi. 25	1 25 (107)	13 53 (252)	Poutū. 28	4 34 (95)	16 56 (268)	Hara. 29	6 37 (71)	19 00 (289)
Kohi. 26	2 23 (109)	14 52 (250)	Poutū. 29	5 21 (90)	17 43 (272)	Hara. 30	7 25 (71)	19 48 (289)
Kohi. 27	3 23 (110)	15 52 (250)	Poutū. 30	6 07 (86)	18 29 (276)	Hara. 31	8 13 (71)	20 35 (288)
Kohi. 28	4 23 (109)	16 51 (252)	Poutū. 31	6 52 (82)	19 14 (280)	Pipi. 1	9 00 (73)	21 22 (286)
Kohi. 29	5 22 (107)	17 49 (255)	Pae. 1	7 38 (78)	20 00 (284)	Pipi. 2	9 46 (75)	22 08 (284)
Kohi. 30	6 18 (104)	18 44 (258)	Pae. 2	8 24 (75)	20 47 (286)	Pipi. 3	10 32 (78)	22 54 (280)
Kohi. 31	7 11 (100)	19 35 (262)	Pae. 3	9 11 (73)	21 34 (288)	Pipi. 4	11 18 (82)	23 40 (276)
Hui. 1	8 02 (95)	20 25 (267)	Pae. 4	9 58 (71)	22 21 (289)	Pipi. 5	12 04 (86)	f 0 26 (272)
Hui. 2	8 50 (91)	21 12 (272)	Pae. 5	10 46 (71)	23 09 (289)	Pipi. 6	12 50 (90)	f 1 13 (268)
Hui. 3	9 36 (86)	21 58 (276)	Pae. 6	11 34 (71)	23 57 (289)	Pipi. 7	13 39 (95)	f 2 03 (263)
Hui. 4	10 22 (82)	22 43 (280)	Pae. 7	12 21 (72)	f 0 44 (287)	Pipi. 8	14 30 (99)	f 2 55 (259)
Hui. 5	11 07 (78)	23 28 (283)	Pae. 8	13 09 (74)	f 1 32 (284)	Pipi. 9	15 24 (103)	f 3 51 (255)
Hui. 6	11 52 (75)	f 0 14 (286)	Pae. 9	13 56 (77)	f 2 19 (281)	Pipi. 10	16 22 (106)	f 4 51 (252)
Hui. 7	12 38 (73)	f 1 01 (288)	Pae. 10	14 44 (81)	f 3 07 (277)	Pipi. 11	17 23 (109)	f 5 53 (251)
Hui. 8	13 25 (71)	f 1 48 (289)	Pae. 11	15 32 (85)	f 3 55 (273)	Pipi. 12	18 26 (109)	f 6 57 (251)
Hui. 9	14 13 (70)	f 2 36 (290)	Pae. 12	16 21 (90)	f 4 45 (268)	Pipi. 14	p19 29 (109)	7 59 (252)
Hui. 10	15 01 (70)	f 3 25 (289)	Pae. 13	17 13 (95)	f 5 38 (263)	Pipi. 15	p20 30 (106)	8 58 (255)
Hui. 11	15 50 (72)	f 4 14 (287)	Pae. 14	18 06 (99)	f 6 32 (259)	Pipi. 16	p21 28 (103)	9 54 (259)
Hui. 12	16 39 (74)	f 5 03 (285)	Pae. 16	p19 02 (103)	7 29 (255)	Pipi. 17	p22 21 (99)	10 46 (263)
Hui. 13	17 28 (77)	f 5 51 (282)	Pae. 17	p20 00 (107)	8 29 (252)	Pipi. 18	p23 12 (95)	11 35 (268)
Hui. 14	18 17 (80)	f 6 40 (277)	Pae. 18	p21 00 (109)	9 29 (251)	Pipi. 19	p24 00 (90)	12 35 (282)
Hui. 16	p19 05 (85)	7 28 (273)	Pae. 19	p22 01 (109)	10 30 (251)	Pipi. 20	0 46 (86)	13 07 (276)
Hui. 17	p19 54 (89)	8 17 (268)	Pae. 20	p23 00 (109)	11 28 (252)	Pipi. 21	1 31 (82)	13 53 (280)
Hui. 18	p20 43 (94)	9 07 (264)	Pae. 21	p23 58 (107)	12 24 (255)	Pipi. 22	2 16 (78)	14 38 (283)
Hui. 19	p21 34 (99)	9 59 (259)	Pae. 22	0 52 (104)	13 16 (258)	Pipi. 23	3 02 (75)	15 24 (286)
Hui. 20	p22 27 (103)	10 52 (255)	Pae. 23	1 43 (100)	14 06 (262)	Pipi. 24	3 48 (73)	16 10 (288)
Hui. 21	p23 21 (106)	11 48 (253)	Pae. 24	2 31 (96)	14 54 (266)	Pipi. 25	4 35 (71)	16 58 (289)
Hui. 22	0 18 (108)	12 54 (251)	Pae. 25	3 18 (91)	15 40 (271)	Pipi. 26	5 22 (71)	17 45 (289)
Hui. 23	1 16 (110)	13 44 (250)	Pae. 26	4 04 (87)	16 25 (275)	Pipi. 27	6 10 (71)	18 33 (289)
Hui. 24	2 14 (109)	14 42 (251)	Pae. 27	4 49 (83)	17 11 (279)	Pipi. 28	6 57 (72)	19 20 (287)
Hui. 25	3 11 (108)	15 38 (253)	Pae. 28	5 34 (79)	17 56 (282)	Pipi. 29	7 44 (74)	20 07 (285)
Hui. 26	4 07 (105)	16 33 (257)	Pae. 29	6 20 (76)	18 42 (285)	Pipi. 30	8 31 (77)	20 53 (282)
Hui. 27	5 00 (102)	17 25 (261)	Pae. 30	7 06 (73)	19 29 (288)	Hōngo. 1	9 16 (80)	21 38 (278)
Hui. 28	5 51 (97)	18 14 (265)	Hara. 1	7 53 (72)	20 16 (289)	Hōngo. 2	10 02 (84)	22 24 (274)
Poutū. 1	6 40 (93)	19 02 (269)	Hara. 2	8 41 (71)	21 04 (289)	Hōngo. 3	10 47 (88)	23 10 (269)
Poutū. 2	7 27 (88)	19 49 (274)	Hara. 3	9 28 (71)	21 51 (289)	Hōngo. 4	11 34 (93)	23 57 (265)
Poutū. 3	8 13 (84)	20 35 (278)	Hara. 4	10 16 (72)	22 39 (288)	Hōngo. 5	12 23 (97)	f 0 47 (261)

Rā	Whiti h m °	Tō h m °	Rā	Whiti h m °	Tō h m °	Rā	Whiti h m °	Tō h m °
Hōngo. 6	13 14 (101)	f 1 39 (257)	Mahu. 8	18 18 (92)	f 6 42 (270)	Wh.Ra. 12	p22 02 (72)	10 25 (287)
Hōngo. 7	14 08 (105)	f 2 35 (254)	Mahu. 10	p19 07 (88)	7 31 (275)	Wh.Ra. 13	p22 49 (74)	11 11 (284)
Hōngo. 8	15 06 (108)	f 3 34 (251)	Mahu. 11	p19 56 (83)	8 19 (279)	Wh.Ra. 14	p23 34 (77)	11 56 (281)
Hōngo. 9	16 07 (109)	f 4 36 (251)	Mahu. 12	p20 44 (79)	9 06 (282)	Wh.Ra. 15	0 19 (80)	12 51 (278)
Hōngo. 10	17 09 (109)	f 5 38 (251)	Mahu. 13	p21 31 (76)	9 54 (285)	Wh.Ra. 16	1 04 (84)	13 26 (274)
Hōngo. 11	18 11 (108)	f 6 40 (253)	Mahu. 14	p22 19 (74)	10 42 (287)	Wh.Ra. 17	1 50 (88)	14 13 (270)
Hōngo. 13	p19 11 (105)	7 38 (257)	Mahu. 15	p23 06 (72)	11 29 (289)	Wh.Ra. 18	2 38 (93)	15 01 (265)
Hōngo. 14	p20 08 (101)	8 33 (261)	Mahu. 16	p23 54 (71)	12 17 (289)	Wh.Ra. 19	3 27 (97)	15 52 (261)
Hōngo. 15	p21 01 (97)	9 25 (265)	Mahu. 17	0 42 (71)	13 05 (288)	Wh.Ra. 20	4 20 (101)	16 46 (257)
Hōngo. 16	p21 52 (92)	10 15 (270)	Mahu. 18	1 29 (72)	13 52 (287)	Wh.Ra. 21	5 16 (105)	17 44 (254)
Hōngo. 17	p22 40 (88)	11 02 (274)	Mahu. 19	2 16 (74)	14 39 (285)	Wh.Ra. 22	6 15 (107)	18 44 (252)
Hōngo. 18	p23 27 (83)	11 49 (279)	Mahu. 20	3 03 (77)	15 25 (282)	Wh.Ra. 23	7 16 (109)	19 46 (251)
Hōngo. 19	0 12 (80)	12 35 (282)	Mahu. 21	3 50 (80)	16 12 (278)	Wh.Ra. 24	8 18 (109)	20 47 (252)
Hōngo. 20	0 58 (76)	13 21 (285)	Mahu. 22	4 36 (84)	16 59 (274)	Wh.Ra. 25	9 19 (107)	21 47 (254)
Hōngo. 21	1 45 (74)	14 07 (287)	Mahu. 23	5 24 (88)	17 46 (270)	Wh.Ra. 26	10 17 (105)	22 44 (257)
Hōngo. 22	2 31 (72)	14 54 (289)	Mahu. 24	6 12 (92)	18 35 (265)	Wh.Ra. 27	11 12 (101)	23 37 (261)
Hōngo. 23	3 19 (71)	15 42 (289)	Mahu. 25	7 02 (97)	19 26 (261)	Wh.Ra. 28	12 04 (97)	f 0 28 (265)
Hōngo. 24	4 06 (71)	16 29 (289)	Mahu. 26	7 53 (101)	20 19 (257)	Wh.Ra. 29	12 53 (93)	f 1 16 (270)
Hōngo. 25	4 54 (72)	17 17 (288)	Mahu. 27	8 47 (104)	21 14 (254)	Wh.Ra. 30	13 41 (88)	f 2 03 (274)
Hōngo. 26	5 41 (73)	18 04 (286)	Mahu. 28	9 43 (107)	22 11 (252)	Haki. 1	14 27 (84)	f 2 50 (278)
Hōngo. 27	6 28 (76)	18 51 (283)	Mahu. 29	10 41 (109)	23 09 (251)	Haki. 2	15 14 (80)	f 3 36 (282)
Hōngo. 28	7 15 (79)	19 37 (279)	Mahu. 30	11 39 (109)	f 0 07 (252)	Haki. 3	16 00 (77)	f 4 23 (285)
Hōngo. 29	8 01 (83)	20 23 (275)	Wh.Nu. 1	12 37 (108)	f 1 04 (253)	Haki. 4	16 47 (74)	f 5 10 (287)
Hōngo. 30	8 46 (87)	21 09 (271)	Wh.Nu. 2	13 33 (106)	f 1 59 (256)	Haki. 5	17 35 (72)	f 5 58 (288)
Hōngo. 31	9 33 (91)	21 55 (267)	Wh.Nu. 3	14 27 (102)	f 2 52 (260)	Haki. 6	18 23 (71)	f 6 46 (289)
Here. 1	10 20 (96)	22 44 (262)	Wh.Nu. 4	15 20 (98)	f 3 44 (264)	Haki. 8	p19 11 (71)	7 34 (289)
Here. 2	11 10 (100)	23 34 (258)	Wh.Nu. 5	16 10 (94)	f 4 33 (268)	Haki. 9	p19 58 (72)	8 21 (287)
Here. 3	12 02 (104)	f 0 27 (255)	Wh.Nu. 6	16 59 (90)	f 5 22 (273)	Haki. 10	p20 45 (73)	9 07 (285)
Here. 4	12 56 (107)	f 1 23 (252)	Wh.Nu. 7	17 47 (85)	f 6 10 (277)	Haki. 11	p21 30 (76)	9 52 (283)
Here. 5	13 54 (109)	f 2 22 (251)	Wh.Nu. 9	p18 35 (81)	6 58 (281)	Haki. 12	p22 15 (79)	10 37 (279)
Here. 6	14 53 (109)	f 3 22 (251)	Wh.Nu. 10	p19 23 (78)	7 46 (284)	Haki. 13	p23 00 (82)	11 21 (276)
Here. 7	15 54 (109)	f 4 22 (252)	Wh.Nu. 11	p20 10 (75)	8 34 (286)	Haki. 14	p23 44 (86)	12 06 (272)
Here. 8	16 54 (106)	f 5 21 (255)	Wh.Nu. 12	p20 58 (73)	9 22 (288)	Haki. 15	0 29 (90)	12 51 (267)
Here. 9	17 51 (103)	f 6 18 (259)	Wh.Nu. 13	p21 46 (71)	10 10 (289)	Haki. 16	1 16 (95)	13 39 (263)
Here. 11	p18 47 (99)	7 12 (263)	Wh.Nu. 14	p22 34 (71)	10 57 (289)	Haki. 17	2 05 (99)	14 30 (259)
Here. 12	p19 39 (95)	8 03 (268)	Wh.Nu. 15	p23 22 (72)	11 44 (288)	Haki. 18	2 58 (103)	15 24 (256)
Here. 13	p20 30 (90)	8 53 (272)	Wh.Nu. 16	0 09 (73)	12 31 (286)	Haki. 19	3 54 (106)	16 23 (253)
Here. 14	p21 18 (85)	9 41 (277)	Wh.Nu. 17	0 55 (75)	13 17 (283)	Haki. 20	4 54 (108)	17 24 (251)
Here. 15	p22 05 (81)	10 28 (281)	Wh.Nu. 18	1 41 (78)	14 03 (280)	Haki. 21	5 57 (109)	18 27 (251)
Here. 16	p22 52 (78)	11 15 (284)	Wh.Nu. 19	2 27 (82)	14 49 (276)	Haki. 22	7 00 (108)	19 29 (253)
Here. 17	p23 39 (75)	12 02 (286)	Wh.Nu. 20	3 13 (86)	15 36 (272)	Haki. 23	8 01 (106)	20 30 (255)
Here. 18	0 26 (73)	12 49 (288)	Wh.Nu. 21	4 01 (90)	16 24 (267)	Haki. 24	9 00 (103)	21 27 (259)
Here. 19	1 13 (71)	13 36 (289)	Wh.Nu. 22	4 50 (95)	17 15 (263)	Haki. 25	9 56 (99)	22 21 (263)
Here. 20	2 01 (71)	14 24 (289)	Wh.Nu. 23	5 42 (99)	18 07 (259)	Haki. 26	10 48 (94)	23 12 (268)
Here. 21	2 49 (71)	15 12 (288)	Wh.Nu. 24	6 36 (103)	19 03 (255)	Haki. 27	11 38 (90)	f 0 00 (272)
Here. 22	3 36 (73)	15 59 (286)	Wh.Nu. 25	7 33 (106)	20 01 (253)	Haki. 28	12 26 (86)	0 48 (277)
Here. 23	4 23 (75)	16 46 (284)	Wh.Nu. 26	8 32 (108)	21 01 (251)	Haki. 29	13 12 (81)	f 1 34 (280)
Here. 24	5 10 (78)	17 33 (281)	Wh.Nu. 27	9 32 (109)	22 00 (251)	Haki. 30	13 59 (78)	f 2 21 (284)
Here. 25	5 57 (81)	18 19 (277)	Wh.Nu. 28	10 31 (108)	22 59 (253)	Haki. 31	14 45 (75)	f 3 08 (286)
Here. 26	6 43 (85)	19 06 (272)	Wh.Nu. 29	11 29 (106)	23 55 (255)			
Here. 27	7 30 (90)	19 53 (268)	Wh.Nu. 30	12 24 (103)	f 0 49 (258)			
Here. 28	8 18 (94)	20 41 (264)	Wh.Nu. 31	13 16 (100)	f 1 41 (262)			
Here. 29	9 07 (98)	21 32 (260)	Wh.Ra. 1	14 07 (95)	f 2 30 (267)			
Here. 30	9 59 (102)	22 24 (256)	Wh.Ra. 2	14 55 (91)	f 3 18 (271)			
Here. 31	10 52 (106)	23 19 (253)	Wh.Ra. 3	15 42 (87)	f 4 05 (275)			
Mahu. 1	11 48 (108)	f 0 15 (251)	Wh.Ra. 4	16 29 (83)	f 4 52 (279)			
Mahu. 2	12 46 (109)	f 1 13 (251)	Wh.Ra. 5	17 16 (79)	f 5 39 (283)			
Mahu. 3	13 44 (109)	f 2 12 (252)	Wh.Ra. 6	18 04 (76)	f 6 27 (286)			
Mahu. 4	14 42 (107)	f 3 10 (254)	Wh.Ra. 8	p18 52 (73)	7 15 (288)			
Mahu. 5	15 39 (105)	f 4 06 (257)	Wh.Ra. 9	p19 40 (72)	8 03 (289)			
Mahu. 6	16 34 (101)	f 5 00 (261)	Wh.Ra. 10	p20 28 (71)	8 51 (289)			
Mahu. 7	17 27 (97)	f 5 52 (265)	Wh.Ra. 11	p21 15 (71)	9 38 (288)			

Rārangi 6: Te Marama

Köpū i te tau 1995

Rā	Whiti h m °	Tō h m °	Rā	Whiti h m °	Tō h m °	Rā	Whiti h m °	Tō h m °
Kohi. 1	3 10 (105)	15 15 (255)	Poutū. 2	3 48 (109)	15 54 (251)	Hara. 1	4 30 (87)	16 35 (273)
Kohi. 2	3 10 (106)	15 15 (254)	Poutū. 3	3 49 (109)	15 55 (251)	Hara. 2	4 31 (87)	16 35 (274)
Kohi. 3	3 10 (106)	15 15 (254)	Poutū. 4	3 50 (109)	15 55 (251)	Hara. 3	4 31 (86)	16 36 (274)
Kohi. 4	3 10 (106)	15 15 (254)	Poutū. 5	3 51 (109)	15 56 (251)	Hara. 4	4 32 (86)	16 36 (275)
Kohi. 5	3 10 (106)	15 15 (254)	Poutū. 6	3 52 (109)	15 57 (252)	Hara. 5	4 32 (85)	16 37 (275)
Kohi. 6	3 10 (106)	15 14 (254)	Poutū. 7	3 53 (108)	15 58 (252)	Hara. 6	4 33 (85)	16 38 (276)
Kohi. 7	3 10 (107)	15 15 (253)	Poutū. 8	3 54 (108)	15 59 (252)	Hara. 7	4 33 (84)	16 38 (276)
Kohi. 8	3 10 (107)	15 15 (253)	Poutū. 9	3 55 (108)	16 00 (252)	Hara. 8	4 34 (84)	16 39 (276)
Kohi. 9	3 10 (107)	15 15 (253)	Poutū. 10	3 56 (108)	16 01 (253)	Hara. 9	4 34 (83)	16 39 (277)
Kohi. 10	3 10 (107)	15 15 (253)	Poutū. 11	3 57 (107)	16 02 (253)	Hara. 10	4 35 (83)	16 40 (277)
Kohi. 11	3 10 (107)	15 15 (252)	Poutū. 12	3 58 (107)	16 03 (253)	Hara. 11	4 36 (82)	16 40 (278)
Kohi. 12	3 10 (108)	15 15 (252)	Poutū. 13	3 59 (107)	16 04 (253)	Hara. 12	4 36 (82)	16 41 (278)
Kohi. 13	3 11 (108)	15 15 (252)	Poutū. 14	3 59 (107)	16 05 (254)	Hara. 13	4 37 (82)	16 42 (279)
Kohi. 14	3 11 (108)	15 16 (252)	Poutū. 15	4 00 (106)	16 05 (254)	Hara. 14	4 37 (81)	16 42 (279)
Kohi. 15	3 11 (108)	15 16 (252)	Poutū. 16	4 01 (106)	16 06 (254)	Hara. 15	4 38 (81)	16 43 (280)
Kohi. 16	3 11 (108)	15 16 (252)	Poutū. 17	4 02 (106)	16 07 (254)	Hara. 16	4 39 (80)	16 44 (280)
Kohi. 17	3 12 (109)	15 17 (251)	Poutū. 18	4 03 (105)	16 08 (255)	Hara. 17	4 39 (80)	16 44 (280)
Kohi. 18	3 12 (109)	15 17 (251)	Poutū. 19	4 04 (105)	16 09 (255)	Hara. 18	4 40 (79)	16 45 (281)
Kohi. 19	3 13 (109)	15 18 (251)	Poutū. 20	4 05 (105)	16 10 (255)	Hara. 19	4 41 (79)	16 46 (281)
Kohi. 20	3 13 (109)	15 18 (251)	Poutū. 21	4 05 (104)	16 10 (256)	Hara. 20	4 41 (79)	16 46 (282)
Kohi. 21	3 14 (109)	15 19 (251)	Poutū. 22	4 06 (104)	16 11 (256)	Hara. 21	4 42 (78)	16 47 (282)
Kohi. 22	3 14 (109)	15 19 (251)	Poutū. 23	4 07 (104)	16 12 (256)	Hara. 22	4 43 (78)	16 48 (283)
Kohi. 23	3 15 (110)	15 20 (250)	Poutū. 24	4 08 (103)	16 13 (257)	Hara. 23	4 43 (77)	16 49 (283)
Kohi. 24	3 15 (110)	15 20 (250)	Poutū. 25	4 08 (103)	16 13 (257)	Hara. 24	4 44 (77)	16 49 (283)
Kohi. 25	3 16 (110)	15 21 (250)	Poutū. 26	4 09 (103)	16 14 (258)	Hara. 25	4 45 (76)	16 50 (284)
Kohi. 26	3 17 (110)	15 22 (250)	Poutū. 27	4 10 (102)	16 15 (258)	Hara. 26	4 46 (76)	16 51 (284)
Kohi. 27	3 17 (110)	15 22 (250)	Poutū. 28	4 11 (102)	16 16 (258)	Hara. 27	4 47 (76)	16 52 (285)
Kohi. 28	3 18 (110)	15 23 (250)	Poutū. 29	4 11 (102)	16 16 (259)	Hara. 28	4 47 (75)	16 52 (285)
Kohi. 29	3 19 (110)	15 24 (250)	Poutū. 30	4 12 (101)	16 17 (259)	Hara. 29	4 48 (75)	16 53 (285)
Kohi. 30	3 19 (110)	15 25 (250)	Poutū. 31	4 13 (101)	16 18 (259)	Hara. 30	4 49 (75)	16 54 (286)
Kohi. 31	3 20 (110)	15 25 (249)	Pae. 1	4 13 (100)	16 18 (260)	Hara. 31	4 50 (74)	16 55 (286)
Hui. 1	3 21 (111)	15 26 (249)	Pae. 2	4 14 (100)	16 19 (260)	Pipi. 1	4 51 (74)	16 56 (286)
Hui. 2	3 22 (111)	15 27 (249)	Pae. 3	4 15 (100)	16 20 (261)	Pipi. 2	4 52 (73)	16 57 (287)
Hui. 3	3 22 (111)	15 28 (249)	Pae. 4	4 15 (99)	16 20 (261)	Pipi. 3	4 53 (73)	16 58 (287)
Hui. 4	3 23 (111)	15 29 (249)	Pae. 5	4 16 (99)	16 21 (261)	Pipi. 4	4 54 (73)	16 59 (287)
Hui. 5	3 24 (111)	15 29 (249)	Pae. 6	4 16 (98)	16 21 (262)	Pipi. 5	4 55 (72)	17 00 (288)
Hui. 6	3 25 (111)	15 30 (249)	Pae. 7	4 17 (98)	16 22 (262)	Pipi. 6	4 55 (72)	17 01 (288)
Hui. 7	3 26 (111)	15 31 (249)	Pae. 8	4 18 (97)	16 23 (263)	Pipi. 7	4 56 (72)	17 02 (288)
Hui. 8	3 27 (111)	15 32 (249)	Pae. 9	4 18 (97)	16 23 (263)	Pipi. 8	4 58 (72)	17 03 (289)
Hui. 9	3 28 (111)	15 33 (249)	Pae. 10	4 19 (97)	16 24 (264)	Pipi. 9	4 59 (71)	17 04 (289)
Hui. 10	3 29 (111)	15 34 (249)	Pae. 11	4 19 (96)	16 24 (264)	Pipi. 10	5 00 (71)	17 05 (289)
Hui. 11	3 29 (111)	15 35 (249)	Pae. 12	4 20 (96)	16 25 (264)	Pipi. 11	5 01 (71)	17 06 (290)
Hui. 12	3 30 (111)	15 36 (249)	Pae. 13	4 21 (95)	16 25 (265)	Pipi. 12	5 02 (70)	17 07 (290)
Hui. 13	3 31 (111)	15 37 (249)	Pae. 14	4 21 (95)	16 26 (265)	Pipi. 13	5 03 (70)	17 08 (290)
Hui. 14	3 32 (111)	15 38 (249)	Pae. 15	4 22 (94)	16 26 (266)	Pipi. 14	5 04 (70)	17 09 (290)
Hui. 15	3 33 (111)	15 39 (249)	Pae. 16	4 22 (94)	16 27 (266)	Pipi. 15	5 05 (70)	17 11 (291)
Hui. 16	3 34 (111)	15 40 (249)	Pae. 17	4 23 (93)	16 28 (267)	Pipi. 16	5 06 (69)	17 12 (291)
Hui. 17	3 35 (111)	15 41 (249)	Pae. 18	4 23 (93)	16 28 (267)	Pipi. 17	5 07 (69)	17 13 (291)
Hui. 18	3 36 (111)	15 42 (249)	Pae. 19	4 24 (93)	16 29 (268)	Pipi. 18	5 09 (69)	17 14 (291)
Hui. 19	3 37 (111)	15 43 (249)	Pae. 20	4 24 (92)	16 29 (268)	Pipi. 19	5 10 (69)	17 15 (291)
Hui. 20	3 38 (111)	15 44 (249)	Pae. 21	4 25 (92)	16 30 (269)	Pipi. 20	5 11 (68)	17 17 (292)
Hui. 21	3 39 (111)	15 45 (250)	Pae. 22	4 25 (91)	16 30 (269)	Pipi. 21	5 12 (68)	17 18 (292)
Hui. 22	3 40 (110)	15 46 (250)	Pae. 23	4 26 (91)	16 31 (269)	Pipi. 22	5 14 (68)	17 19 (292)
Hui. 23	3 41 (110)	15 47 (250)	Pae. 24	4 26 (90)	16 31 (270)	Pipi. 23	5 15 (68)	17 20 (292)
Hui. 24	3 42 (110)	15 48 (250)	Pae. 25	4 27 (90)	16 32 (270)	Pipi. 24	5 16 (68)	17 22 (292)
Hui. 25	3 43 (110)	15 49 (250)	Pae. 26	4 27 (89)	16 32 (271)	Pipi. 25	5 17 (68)	17 23 (292)
Hui. 26	3 44 (110)	15 50 (250)	Pae. 27	4 28 (89)	16 33 (271)	Pipi. 26	5 19 (67)	17 24 (293)
Hui. 27	3 45 (110)	15 51 (250)	Pae. 28	4 28 (88)	16 33 (272)	Pipi. 27	5 20 (67)	17 26 (293)
Hui. 28	3 46 (110)	15 52 (250)	Pae. 29	4 29 (88)	16 34 (272)	Pipi. 28	5 21 (67)	17 27 (293)
Poutū. 1	3 47 (109)	15 53 (251)	Pae. 30	4 30 (87)	16 34 (273)	Pipi. 29	5 23 (67)	17 28 (293)

Rā	Whiti h m °	Tō h m °	Rā	Whiti h m °	Tō h m °	Rā	Whiti h m °	Tō h m °
Pipi. 30	5 24 (67)	17 30 (293)	Here. 31	6 35 (81)	18 40 (279)	Wh.Ra. 1	7 22 (110)	19 27 (250)
Hōngo. 1	5 25 (67)	17 31 (293)	Mahu. 1	6 36 (82)	18 41 (278)	Wh.Ra. 2	7 23 (110)	19 28 (250)
Hōngo. 2	5 27 (67)	17 32 (293)	Mahu. 2	6 37 (82)	18 42 (278)	Wh.Ra. 3	7 24 (111)	19 30 (249)
Hōngo. 3	5 28 (67)	17 34 (293)	Mahu. 3	6 37 (83)	18 42 (277)	Wh.Ra. 4	7 25 (111)	19 31 (249)
Hōngo. 4	5 29 (67)	17 35 (293)	Mahu. 4	6 38 (83)	18 43 (277)	Wh.Ra. 5	7 27 (111)	19 32 (249)
Hōngo. 5	5 31 (67)	17 36 (293)	Mahu. 5	6 39 (84)	18 43 (276)	Wh.Ra. 6	7 28 (111)	19 33 (248)
Hōngo. 6	5 32 (67)	17 38 (293)	Mahu. 6	6 39 (84)	18 44 (276)	Wh.Ra. 7	7 29 (112)	19 35 (248)
Hōngo. 7	5 34 (67)	17 39 (293)	Mahu. 7	6 40 (85)	18 45 (275)	Wh.Ra. 8	7 30 (112)	19 36 (248)
Hōngo. 8	5 35 (67)	17 41 (293)	Mahu. 8	6 41 (85)	18 45 (275)	Wh.Ra. 9	7 32 (112)	19 37 (248)
Hōngo. 9	5 36 (67)	17 42 (293)	Mahu. 9	6 41 (86)	18 46 (274)	Wh.Ra. 10	7 33 (112)	19 39 (247)
Hōngo. 10	5 38 (67)	17 43 (293)	Mahu. 10	6 42 (86)	18 47 (274)	Wh.Ra. 11	7 34 (113)	19 40 (247)
Hōngo. 11	5 39 (67)	17 45 (293)	Mahu. 11	6 42 (87)	18 47 (273)	Wh.Ra. 12	7 36 (113)	19 41 (247)
Hōngo. 12	5 41 (67)	17 46 (293)	Mahu. 12	6 43 (87)	18 48 (273)	Wh.Ra. 13	7 37 (113)	19 43 (247)
Hōngo. 13	5 42 (67)	17 48 (293)	Mahu. 13	6 44 (88)	18 48 (272)	Wh.Ra. 14	7 39 (113)	19 44 (247)
Hōngo. 14	5 43 (67)	17 49 (293)	Mahu. 14	6 44 (88)	18 49 (272)	Wh.Ra. 15	7 40 (113)	19 46 (246)
Hōngo. 15	5 45 (67)	17 50 (293)	Mahu. 15	6 45 (89)	18 50 (271)	Wh.Ra. 16	7 41 (114)	19 47 (246)
Hōngo. 16	5 46 (67)	17 52 (293)	Mahu. 16	6 45 (89)	18 50 (271)	Wh.Ra. 17	7 43 (114)	19 49 (246)
Hōngo. 17	5 48 (67)	17 53 (293)	Mahu. 17	6 46 (90)	18 51 (270)	Wh.Ra. 18	7 44 (114)	19 50 (246)
Hōngo. 18	5 49 (67)	17 55 (293)	Mahu. 18	6 47 (90)	18 51 (270)	Wh.Ra. 19	7 46 (114)	19 51 (246)
Hōngo. 19	5 50 (67)	17 56 (293)	Mahu. 19	6 47 (91)	18 52 (269)	Wh.Ra. 20	7 47 (114)	19 53 (246)
Hōngo. 20	5 52 (67)	17 57 (293)	Mahu. 20	6 48 (91)	18 53 (269)	Wh.Ra. 21	7 49 (114)	19 54 (246)
Hōngo. 21	5 53 (68)	17 59 (292)	Mahu. 21	6 48 (92)	18 53 (268)	Wh.Ra. 22	7 50 (114)	19 56 (246)
Hōngo. 22	5 54 (68)	18 00 (292)	Mahu. 22	6 49 (92)	18 54 (268)	Wh.Ra. 23	7 52 (114)	19 57 (245)
Hōngo. 23	5 56 (68)	18 01 (292)	Mahu. 23	6 50 (93)	18 54 (267)	Wh.Ra. 24	7 53 (115)	19 59 (245)
Hōngo. 24	5 57 (68)	18 03 (292)	Mahu. 24	6 50 (93)	18 55 (267)	Wh.Ra. 25	7 55 (115)	20 01 (245)
Hōngo. 25	5 58 (68)	18 04 (292)	Mahu. 25	6 51 (94)	18 56 (266)	Wh.Ra. 26	7 56 (115)	20 02 (245)
Hōngo. 26	6 00 (68)	18 05 (291)	Mahu. 26	6 51 (94)	18 56 (266)	Wh.Ra. 27	7 58 (115)	20 04 (245)
Hōngo. 27	6 01 (69)	18 06 (291)	Mahu. 27	6 52 (95)	18 57 (265)	Wh.Ra. 28	7 59 (115)	20 05 (245)
Hōngo. 28	6 02 (69)	18 08 (291)	Mahu. 28	6 53 (95)	18 57 (265)	Wh.Ra. 29	8 01 (115)	20 07 (245)
Hōngo. 29	6 03 (69)	18 09 (291)	Mahu. 29	6 53 (96)	18 58 (264)	Wh.Ra. 30	8 02 (115)	20 08 (245)
Hōngo. 30	6 05 (69)	18 10 (291)	Mahu. 30	6 54 (96)	18 59 (264)	Haki. 1	8 04 (115)	20 10 (245)
Hōngo. 31	6 06 (70)	18 11 (290)	Wh.Nu. 1	6 55 (97)	18 59 (263)	Haki. 2	8 05 (115)	20 11 (245)
Here. 1	6 07 (70)	18 12 (290)	Wh.Nu. 2	6 55 (97)	19 00 (263)	Haki. 3	8 07 (115)	20 13 (245)
Here. 2	6 08 (70)	18 14 (290)	Wh.Nu. 3	6 56 (98)	19 01 (262)	Haki. 4	8 08 (115)	20 14 (245)
Here. 3	6 09 (70)	18 15 (290)	Wh.Nu. 4	6 57 (98)	19 01 (262)	Haki. 5	8 10 (115)	20 16 (245)
Here. 4	6 11 (71)	18 16 (289)	Wh.Nu. 5	6 57 (99)	19 02 (261)	Haki. 6	8 12 (114)	20 17 (246)
Here. 5	6 12 (71)	18 17 (289)	Wh.Nu. 6	6 58 (99)	19 03 (261)	Haki. 7	8 13 (114)	20 19 (246)
Here. 6	6 13 (71)	18 18 (289)	Wh.Nu. 7	6 59 (100)	19 04 (260)	Haki. 8	8 14 (114)	20 20 (246)
Here. 7	6 14 (72)	18 19 (288)	Wh.Nu. 8	6 59 (100)	19 04 (260)	Haki. 9	8 16 (114)	20 22 (246)
Here. 8	6 15 (72)	18 20 (288)	Wh.Nu. 9	7 00 (101)	19 05 (259)	Haki. 10	8 17 (114)	20 23 (246)
Here. 9	6 16 (72)	18 21 (288)	Wh.Nu. 10	7 01 (101)	19 06 (259)	Haki. 11	8 19 (114)	20 25 (246)
Here. 10	6 17 (72)	18 22 (287)	Wh.Nu. 11	7 02 (101)	19 07 (258)	Haki. 12	8 20 (114)	20 26 (246)
Here. 11	6 18 (73)	18 23 (287)	Wh.Nu. 12	7 02 (102)	19 07 (258)	Haki. 13	8 22 (114)	20 27 (246)
Here. 12	6 19 (73)	18 24 (287)	Wh.Nu. 13	7 03 (102)	19 08 (257)	Haki. 14	8 23 (113)	20 29 (247)
Here. 13	6 20 (74)	18 25 (286)	Wh.Nu. 14	7 04 (103)	19 09 (257)	Haki. 15	8 25 (113)	20 30 (247)
Here. 14	6 21 (74)	18 26 (286)	Wh.Nu. 15	7 05 (103)	19 10 (256)	Haki. 16	8 26 (113)	20 32 (247)
Here. 15	6 22 (74)	18 27 (286)	Wh.Nu. 16	7 06 (104)	19 11 (256)	Haki. 17	8 27 (113)	20 33 (247)
Here. 16	6 23 (75)	18 28 (285)	Wh.Nu. 17	7 06 (104)	19 12 (256)	Haki. 18	8 29 (113)	20 34 (247)
Here. 17	6 24 (75)	18 29 (285)	Wh.Nu. 18	7 07 (105)	19 13 (255)	Haki. 19	8 30 (112)	20 35 (248)
Here. 18	6 25 (75)	18 30 (284)	Wh.Nu. 19	7 08 (105)	19 13 (255)	Haki. 20	8 31 (112)	20 37 (248)
Here. 19	6 26 (76)	18 31 (284)	Wh.Nu. 20	7 09 (105)	19 14 (254)	Haki. 21	8 33 (112)	20 38 (248)
Here. 20	6 27 (76)	18 32 (284)	Wh.Nu. 21	7 10 (106)	19 15 (254)	Haki. 22	8 34 (112)	20 39 (248)
Here. 21	6 27 (77)	18 33 (283)	Wh.Nu. 22	7 11 (106)	19 16 (254)	Haki. 23	8 35 (111)	20 40 (249)
Here. 22	6 28 (77)	18 33 (283)	Wh.Nu. 23	7 12 (107)	19 17 (253)	Haki. 24	8 36 (111)	20 42 (249)
Here. 23	6 29 (78)	18 34 (282)	Wh.Nu. 24	7 13 (107)	19 18 (253)	Haki. 25	8 37 (111)	20 43 (249)
Here. 24	6 30 (78)	18 35 (282)	Wh.Nu. 25	7 14 (107)	19 19 (252)	Haki. 26	8 39 (110)	20 44 (250)
Here. 25	6 31 (78)	18 36 (281)	Wh.Nu. 26	7 15 (108)	19 20 (252)	Haki. 27	8 40 (110)	20 45 (250)
Here. 26	6 32 (79)	18 37 (281)	Wh.Nu. 27	7 16 (108)	19 21 (252)	Haki. 28	8 41 (110)	20 46 (250)
Here. 27	6 32 (79)	18 37 (280)	Wh.Nu. 28	7 17 (109)	19 23 (251)	Haki. 29	8 42 (110)	20 47 (251)
Here. 28	6 33 (80)	18 38 (280)	Wh.Nu. 29	7 18 (109)	19 24 (251)	Haki. 30	8 43 (109)	20 48 (251)
Here. 29	6 34 (80)	18 39 (280)	Wh.Nu. 30	7 19 (109)	19 25 (251)	Haki. 31	8 44 (109)	20 49 (251)
Here. 30	6 34 (81)	18 39 (279)	Wh.Nu. 31	7 21 (110)	19 26 (250)			

Rārangi 7: Kōpū

Pareārau i te tau 1995

Rā	Whiti h m °	Tō h m °	Rā	Whiti h m °	Tō h m °	Rā	Whiti h m °	Tō h m °
Kohi. 1	3 51 (110)	15 54 (250)	Poutū. 4	0 26 (112)	12 30 (248)	Hara. 5	p20 21 (112)	8 23 (248)
Kohi. 2	3 48 (110)	15 51 (250)	Poutū. 5	0 23 (112)	12 26 (248)	Hara. 6	p20 16 (112)	8 19 (248)
Kohi. 3	3 45 (110)	15 48 (250)	Poutū. 6	0 19 (112)	12 22 (248)	Hara. 7	p20 12 (112)	8 15 (248)
Kohi. 4	3 41 (110)	15 45 (250)	Poutū. 7	0 16 (112)	12 19 (248)	Hara. 8	p20 07 (112)	8 10 (248)
Kohi. 5	3 38 (110)	15 42 (249)	Poutū. 8	0 12 (112)	12 15 (248)	Hara. 9	p20 03 (112)	8 06 (248)
Kohi. 6	3 35 (111)	15 39 (249)	Poutū. 9	0 08 (112)	12 11 (248)	Hara. 10	p19 59 (112)	8 01 (248)
Kohi. 7	3 32 (111)	15 35 (249)	Poutū. 10	0 05 (112)	12 08 (248)	Hara. 11	p19 54 (112)	7 57 (248)
Kohi. 8	3 29 (111)	15 32 (249)	Poutū. 11	0 01 (112)	12 04 (248)	Hara. 12	p19 50 (112)	7 53 (248)
Kohi. 9	3 26 (111)	15 29 (249)	Poutū. 12	p23 57 (112)	12 01 (248)	Hara. 13	p19 46 (112)	7 48 (248)
Kohi. 10	3 23 (111)	15 26 (249)	Poutū. 13	p23 54 (112)	11 57 (248)	Hara. 14	p19 41 (112)	7 44 (249)
Kohi. 11	3 20 (111)	15 23 (249)	Poutū. 14	p23 50 (112)	11 53 (248)	Hara. 15	p19 37 (111)	7 39 (249)
Kohi. 12	3 16 (111)	15 20 (249)	Poutū. 15	p23 46 (112)	11 49 (248)	Hara. 16	p19 32 (111)	7 35 (249)
Kohi. 13	3 13 (111)	15 17 (249)	Poutū. 16	p23 43 (112)	11 46 (248)	Hara. 17	p19 28 (111)	7 31 (249)
Kohi. 14	3 10 (111)	15 13 (249)	Poutū. 17	p23 39 (112)	11 42 (248)	Hara. 18	p19 23 (111)	7 26 (249)
Kohi. 15	3 07 (111)	15 10 (249)	Poutū. 18	p23 35 (112)	11 38 (248)	Hara. 19	p19 19 (111)	7 22 (249)
Kohi. 16	3 04 (111)	15 07 (249)	Poutū. 19	p23 31 (112)	11 34 (248)	Hara. 20	p19 15 (111)	7 17 (249)
Kohi. 17	3 01 (111)	15 04 (249)	Poutū. 20	p23 28 (112)	11 31 (248)	Hara. 21	p19 10 (111)	7 13 (249)
Kohi. 18	2 57 (111)	15 01 (249)	Poutū. 21	p23 24 (112)	11 27 (248)	Hara. 22	p19 06 (111)	7 08 (249)
Kohi. 19	2 54 (111)	14 58 (249)	Poutū. 22	p23 20 (112)	11 23 (248)	Hara. 23	p19 01 (111)	7 04 (249)
Kohi. 20	2 51 (111)	14 54 (249)	Poutū. 23	p23 16 (112)	11 19 (248)	Hara. 24	p18 57 (111)	6 59 (249)
Kohi. 21	2 48 (111)	14 51 (249)	Poutū. 24	p23 12 (112)	11 15 (248)	Hara. 25	p18 52 (111)	6 55 (249)
Kohi. 22	2 45 (111)	14 48 (249)	Poutū. 25	p23 09 (112)	11 12 (248)	Hara. 26	p18 48 (111)	6 51 (249)
Kohi. 23	2 41 (111)	14 45 (249)	Poutū. 26	p23 05 (112)	11 08 (248)	Hara. 27	p18 43 (111)	6 46 (249)
Kohi. 24	2 38 (111)	14 42 (249)	Poutū. 27	p23 01 (112)	11 04 (248)	Hara. 28	p18 39 (111)	6 42 (249)
Kohi. 25	2 35 (111)	14 38 (249)	Poutū. 28	p22 57 (112)	11 00 (248)	Hara. 29	p18 34 (111)	6 37 (249)
Kohi. 26	2 32 (111)	14 35 (249)	Poutū. 29	p22 53 (112)	10 56 (248)	Hara. 30	p18 30 (111)	6 33 (249)
Kohi. 27	2 29 (111)	14 32 (249)	Poutū. 30	p22 49 (112)	10 52 (248)	Hara. 31	p18 26 (111)	6 28 (249)
Kohi. 28	2 25 (111)	14 29 (249)	Poutū. 31	p22 45 (112)	10 48 (248)	Pipi. 1	p18 21 (111)	6 24 (249)
Kohi. 29	2 22 (111)	14 25 (249)	Pae. 1	p22 41 (112)	10 44 (248)	Pipi. 1	18 17 (111)	f 6 19 (249)
Kohi. 30	2 19 (111)	14 22 (249)	Pae. 2	p22 38 (112)	10 40 (248)	Pipi. 2	18 12 (111)	f 6 15 (249)
Kohi. 31	2 16 (111)	14 19 (249)	Pae. 3	p22 34 (112)	10 37 (248)	Pipi. 3	18 08 (111)	f 6 10 (249)
Hui. 1	2 12 (111)	14 16 (249)	Pae. 4	p22 30 (112)	10 33 (248)	Pipi. 4	18 03 (111)	f 6 06 (249)
Hui. 2	2 09 (111)	14 12 (249)	Pae. 5	p22 26 (112)	10 29 (248)	Pipi. 5	17 59 (111)	f 6 01 (249)
Hui. 3	2 06 (111)	14 09 (249)	Pae. 6	p22 22 (112)	10 25 (248)	Pipi. 6	17 54 (111)	f 5 57 (249)
Hui. 4	2 02 (111)	14 06 (249)	Pae. 7	p22 18 (112)	10 21 (248)	Pipi. 7	17 50 (111)	f 5 52 (249)
Hui. 5	1 59 (111)	14 02 (249)	Pae. 8	p22 14 (112)	10 17 (248)	Pipi. 8	17 45 (111)	f 5 48 (249)
Hui. 6	1 56 (111)	13 59 (249)	Pae. 9	p22 10 (112)	10 13 (248)	Pipi. 9	17 41 (111)	f 5 44 (249)
Hui. 7	1 52 (111)	13 56 (249)	Pae. 10	p22 06 (112)	10 08 (248)	Pipi. 10	17 36 (111)	f 5 39 (249)
Hui. 8	1 49 (111)	13 52 (249)	Pae. 11	p22 02 (112)	10 04 (248)	Pipi. 11	17 32 (111)	f 5 35 (249)
Hui. 9	1 46 (111)	13 49 (249)	Pae. 12	p21 57 (112)	10 00 (248)	Pipi. 12	17 28 (111)	f 5 30 (249)
Hui. 10	1 42 (111)	13 46 (249)	Pae. 13	p21 53 (112)	9 56 (248)	Pipi. 13	17 23 (111)	f 5 26 (249)
Hui. 11	1 39 (111)	13 42 (249)	Pae. 14	p21 49 (112)	9 52 (248)	Pipi. 14	17 19 (111)	f 5 21 (249)
Hui. 12	1 36 (111)	13 39 (249)	Pae. 15	p21 45 (112)	9 48 (248)	Pipi. 15	17 14 (111)	f 5 17 (249)
Hui. 13	1 32 (111)	13 36 (249)	Pae. 16	p21 41 (112)	9 44 (248)	Pipi. 16	17 10 (111)	f 5 12 (249)
Hui. 14	1 29 (111)	13 32 (249)	Pae. 17	p21 37 (112)	9 40 (248)	Pipi. 17	17 05 (111)	f 5 08 (249)
Hui. 15	1 26 (112)	13 29 (248)	Pae. 18	p21 33 (112)	9 36 (248)	Pipi. 18	17 01 (111)	f 5 04 (249)
Hui. 16	1 22 (112)	13 25 (248)	Pae. 19	p21 29 (112)	9 31 (248)	Pipi. 19	16 57 (111)	f 4 59 (249)
Hui. 17	1 19 (112)	13 22 (248)	Pae. 20	p21 24 (112)	9 27 (248)	Pipi. 20	16 52 (111)	f 4 55 (249)
Hui. 18	1 15 (112)	13 19 (248)	Pae. 21	p21 20 (112)	9 23 (248)	Pipi. 21	16 48 (111)	f 4 50 (249)
Hui. 19	1 12 (112)	13 15 (248)	Pae. 22	p21 16 (112)	9 19 (248)	Pipi. 22	16 43 (111)	f 4 46 (249)
Hui. 20	1 09 (112)	13 12 (248)	Pae. 23	p21 12 (112)	9 15 (248)	Pipi. 23	16 39 (111)	f 4 42 (249)
Hui. 21	1 05 (112)	13 08 (248)	Pae. 24	p21 08 (112)	9 10 (248)	Pipi. 24	16 35 (111)	f 4 37 (249)
Hui. 22	1 02 (112)	13 05 (248)	Pae. 25	p21 03 (112)	9 06 (248)	Pipi. 25	16 30 (111)	f 4 33 (249)
Hui. 23	0 58 (112)	13 01 (248)	Pae. 26	p20 59 (112)	9 02 (248)	Pipi. 26	16 26 (111)	f 4 29 (249)
Hui. 24	0 55 (112)	12 58 (248)	Pae. 27	p20 55 (112)	8 58 (248)	Pipi. 27	16 22 (111)	f 4 24 (249)
Hui. 25	0 51 (112)	12 54 (248)	Pae. 28	p20 51 (112)	8 53 (248)	Pipi. 28	16 17 (111)	f 4 20 (249)
Hui. 26	0 48 (112)	12 51 (248)	Pae. 29	p20 46 (112)	8 49 (248)	Pipi. 29	16 13 (111)	f 4 16 (249)
Hui. 27	0 44 (112)	12 47 (248)	Pae. 30	p20 42 (112)	8 45 (248)	Pipi. 30	16 09 (111)	f 4 11 (249)
Hui. 28	0 41 (112)	12 44 (248)	Hara. 1	p20 38 (112)	8 41 (248)	Hōngo. 1	16 04 (111)	f 4 07 (249)
Poutū. 1	0 37 (112)	12 40 (248)	Hara. 2	p20 34 (112)	8 36 (248)	Hōngo. 2	16 00 (111)	f 4 03 (249)
Poutū. 2	0 34 (112)	12 37 (248)	Hara. 3	p20 29 (112)	8 32 (248)	Hōngo. 3	15 56 (111)	f 3 58 (249)
Poutū. 3	0 30 (112)	12 33 (248)	Hara. 4	p20 25 (112)	8 28 (248)	Hōngo. 4	15 51 (111)	f 3 54 (249)

Rā	Whiti		Tō	Rā	Whiti		Tō	Rā	Whiti		Tō
	h	m °	h m °		h	m °	h m °		h	m °	h m °
Hōngo. 5	15	47 (111)	f 3 50 (249)	Mahu. 5	11	46 (111)	23 49 (249)	Wh.Ra. 6	8	24 (112)	20 27 (248)
Hōngo. 6	15	43 (111)	f 3 46 (249)	Mahu. 6	11	42 (111)	23 45 (249)	Wh.Ra. 7	8	21 (113)	20 24 (247)
Hōngo. 7	15	39 (111)	f 3 41 (249)	Mahu. 7	11	39 (111)	23 42 (249)	Wh.Ra. 8	8	18 (113)	20 21 (247)
Hōngo. 8	15	34 (111)	f 3 37 (249)	Mahu. 8	11	35 (111)	23 38 (249)	Wh.Ra. 9	8	15 (113)	20 18 (247)
Hōngo. 9	15	30 (111)	f 3 33 (249)	Mahu. 9	11	32 (111)	23 35 (249)	Wh.Ra. 10	8	12 (113)	20 15 (247)
Hōngo. 10	15	26 (111)	f 3 29 (249)	Mahu. 10	11	28 (111)	23 31 (249)	Wh.Ra. 11	8	09 (113)	20 12 (247)
Hōngo. 11	15	22 (111)	f 3 24 (249)	Mahu. 11	11	25 (111)	23 28 (249)	Wh.Ra. 12	8	06 (113)	20 09 (247)
Hōngo. 12	15	17 (111)	f 3 20 (249)	Mahu. 12	11	21 (111)	23 24 (249)	Wh.Ra. 13	8	03 (113)	20 06 (247)
Hōngo. 13	15	13 (111)	f 3 16 (249)	Mahu. 13	11	18 (111)	23 21 (249)	Wh.Ra. 14	8	00 (113)	20 03 (247)
Hōngo. 14	15	09 (111)	f 3 12 (249)	Mahu. 14	11	14 (111)	23 18 (249)	Wh.Ra. 15	7	57 (113)	20 00 (247)
Hōngo. 15	15	05 (111)	f 3 08 (249)	Mahu. 15	11	11 (111)	23 14 (249)	Wh.Ra. 16	7	54 (113)	19 57 (247)
Hōngo. 16	15	01 (111)	f 3 04 (249)	Mahu. 16	11	07 (111)	23 11 (249)	Wh.Ra. 17	7	51 (113)	19 54 (247)
Hōngo. 17	14	57 (111)	f 2 59 (249)	Mahu. 17	11	04 (111)	23 07 (249)	Wh.Ra. 18	7	48 (113)	19 51 (247)
Hōngo. 18	14	52 (111)	f 2 55 (249)	Mahu. 18	11	01 (111)	23 04 (249)	Wh.Ra. 19	7	45 (113)	19 48 (247)
Hōngo. 19	14	48 (111)	f 2 51 (249)	Mahu. 19	10	57 (111)	23 01 (249)	Wh.Ra. 20	7	42 (113)	19 45 (247)
Hōngo. 20	14	44 (111)	f 2 47 (249)	Mahu. 20	10	54 (111)	22 57 (249)	Wh.Ra. 21	7	39 (113)	19 42 (247)
Hōngo. 21	14	40 (111)	f 2 43 (249)	Mahu. 21	10	51 (111)	22 54 (249)	Wh.Ra. 22	7	36 (113)	19 39 (247)
Hōngo. 22	14	36 (111)	f 2 39 (249)	Mahu. 22	10	47 (111)	22 50 (249)	Wh.Ra. 23	7	33 (113)	19 36 (247)
Hōngo. 23	14	32 (111)	f 2 35 (249)	Mahu. 23	10	44 (111)	22 47 (249)	Wh.Ra. 24	7	30 (113)	19 33 (247)
Hōngo. 24	14	28 (111)	f 2 31 (249)	Mahu. 24	10	41 (111)	22 44 (249)	Wh.Ra. 25	7	27 (113)	19 30 (247)
Hōngo. 25	14	24 (111)	f 2 27 (249)	Mahu. 25	10	37 (111)	22 40 (249)	Wh.Ra. 26	7	24 (113)	19 27 (247)
Hōngo. 26	14	20 (111)	f 2 23 (249)	Mahu. 26	10	34 (111)	22 37 (248)	Wh.Ra. 27	7	21 (113)	19 24 (247)
Hōngo. 27	14	16 (111)	f 2 19 (249)	Mahu. 27	10	31 (112)	22 34 (248)	Wh.Ra. 28	7	18 (113)	19 21 (247)
Hōngo. 28	14	12 (111)	f 2 15 (249)	Mahu. 28	10	27 (112)	22 31 (248)	Wh.Ra. 29	7	15 (113)	19 18 (247)
Hōngo. 29	14	08 (111)	f 2 11 (249)	Mahu. 29	10	24 (112)	22 27 (248)	Wh.Ra. 30	7	12 (113)	19 15 (247)
Hōngo. 30	14	04 (111)	f 2 07 (249)	Mahu. 30	10	21 (112)	22 24 (248)	Haki. 1	7	09 (113)	19 12 (247)
Hōngo. 31	14	00 (111)	f 2 03 (249)	Wh.Nu. 1	10	17 (112)	22 21 (248)	Haki. 2	7	06 (113)	19 10 (247)
Here. 1	13	56 (111)	f 1 59 (249)	Wh.Nu. 2	10	14 (112)	22 17 (248)	Haki. 3	7	03 (113)	19 07 (247)
Here. 2	13	52 (111)	f 1 55 (249)	Wh.Nu. 3	10	11 (112)	22 14 (248)	Haki. 4	7	00 (113)	19 04 (247)
Here. 3	13	48 (111)	f 1 51 (249)	Wh.Nu. 4	10	08 (112)	22 11 (248)	Haki. 5	6	57 (113)	19 01 (247)
Here. 4	13	44 (111)	f 1 47 (249)	Wh.Nu. 5	10	04 (112)	22 08 (248)	Haki. 6	6	54 (113)	18 58 (247)
Here. 5	13	40 (111)	f 1 43 (249)	Wh.Nu. 6	10	01 (112)	22 04 (248)	Haki. 7	6	51 (113)	18 55 (247)
Here. 6	13	36 (111)	f 1 39 (249)	Wh.Nu. 7	9	58 (112)	22 01 (248)	Haki. 8	6	48 (113)	18 52 (247)
Here. 7	13	33 (111)	f 1 36 (249)	Wh.Nu. 8	9	55 (112)	21 58 (248)	Haki. 9	6	45 (113)	18 49 (247)
Here. 8	13	29 (111)	f 1 32 (249)	Wh.Nu. 9	9	51 (112)	21 55 (248)	Haki. 10	6	42 (113)	18 46 (247)
Here. 9	13	25 (111)	f 1 28 (249)	Wh.Nu. 10	9	48 (112)	21 52 (248)	Haki. 11	6	39 (113)	18 43 (247)
Here. 10	13	21 (111)	f 1 24 (249)	Wh.Nu. 11	9	45 (112)	21 48 (248)	Haki. 12	6	36 (113)	18 40 (247)
Here. 11	13	17 (111)	f 1 20 (249)	Wh.Nu. 12	9	42 (112)	21 45 (248)	Haki. 13	6	34 (113)	18 37 (247)
Here. 12	13	13 (111)	f 1 16 (249)	Wh.Nu. 13	9	39 (112)	21 42 (248)	Haki. 14	6	31 (113)	18 34 (247)
Here. 13	13	10 (111)	f 1 13 (249)	Wh.Nu. 14	9	35 (112)	21 39 (248)	Haki. 15	6	28 (113)	18 31 (247)
Here. 14	13	06 (111)	f 1 09 (249)	Wh.Nu. 15	9	32 (112)	21 36 (248)	Haki. 16	6	25 (113)	18 28 (247)
Here. 15	13	02 (111)	f 1 05 (249)	Wh.Nu. 16	9	29 (112)	21 32 (248)	Haki. 17	6	22 (113)	18 25 (247)
Here. 16	12	58 (111)	f 1 01 (249)	Wh.Nu. 17	9	26 (112)	21 29 (248)	Haki. 18	6	19 (113)	18 22 (247)
Here. 17	12	55 (111)	f 0 58 (249)	Wh.Nu. 18	9	23 (112)	21 26 (248)	Haki. 19	6	16 (113)	18 19 (247)
Here. 18	12	51 (111)	f 0 54 (249)	Wh.Nu. 19	9	20 (112)	21 23 (248)	Haki. 20	6	13 (113)	18 16 (247)
Here. 19	12	47 (111)	f 0 50 (249)	Wh.Nu. 20	9	17 (112)	21 20 (248)	Haki. 21	6	10 (113)	18 13 (247)
Here. 20	12	43 (111)	f 0 46 (249)	Wh.Nu. 21	9	13 (112)	21 17 (248)	Haki. 22	6	07 (113)	18 11 (247)
Here. 21	12	40 (111)	f 0 43 (249)	Wh.Nu. 22	9	10 (112)	21 14 (248)	Haki. 23	6	04 (113)	18 08 (247)
Here. 22	12	36 (111)	f 0 39 (249)	Wh.Nu. 23	9	07 (112)	21 11 (248)	Haki. 24	6	01 (113)	18 05 (247)
Here. 23	12	32 (111)	f 0 35 (249)	Wh.Nu. 24	9	04 (112)	21 07 (248)	Haki. 25	5	58 (113)	18 02 (247)
Here. 24	12	29 (111)	f 0 32 (249)	Wh.Nu. 25	9	01 (112)	21 04 (248)	Haki. 26	5	55 (113)	17 59 (247)
Here. 25	12	25 (111)	f 0 28 (249)	Wh.Nu. 26	8	58 (112)	21 01 (248)	Haki. 27	5	52 (113)	17 56 (247)
Here. 26	12	21 (111)	f 0 24 (249)	Wh.Nu. 27	8	55 (112)	20 58 (248)	Haki. 28	5	49 (113)	17 53 (247)
Here. 27	12	18 (111)	f 0 21 (249)	Wh.Nu. 28	8	52 (112)	20 55 (248)	Haki. 29	5	46 (113)	17 50 (247)
Here. 28	12	14 (111)	f 0 17 (249)	Wh.Nu. 29	8	49 (112)	20 52 (248)	Haki. 30	5	43 (113)	17 47 (247)
Here. 29	12	11 (111)	f 0 14 (249)	Wh.Nu. 30	8	45 (112)	20 49 (248)	Haki. 31	5	41 (113)	17 44 (247)
Here. 30	12	07 (111)	f 0 10 (249)	Wh.Nu. 31	8	42 (112)	20 46 (248)				
Here. 31	12	03 (111)	f 0 06 (249)	Wh.Ra. 1	8	39 (112)	20 43 (248)				
Mahu. 1	12	00 (111)	f 0 03 (249)	Wh.Ra. 2	8	36 (112)	20 40 (248)				
Mahu. 2	11	56 (111)	23 59 (249)	Wh.Ra. 3	8	33 (112)	20 37 (248)				
Mahu. 3	11	53 (111)	23 56 (249)	Wh.Ra. 4	8	30 (112)	20 34 (248)				
Mahu. 4	11	49 (111)	23 52 (249)	Wh.Ra. 5	8	27 (112)	20 30 (248)				

Rārangi 8: Pareārau

Takurua i te tau 1995

Rā	Whiti h m °	Tō h m °	Rā	Whiti h m °	Tō h m °	Rā	Whiti h m °	Tō h m °
Kohi. 1	p18 25 (107)	6 28 (253)	Poutū. 3	14 21 (107)	f 2 24 (253)	Hara. 4	10 18 (107)	22 20 (253)
Kohi. 2	p18 21 (107)	6 24 (253)	Poutū. 4	14 17 (107)	f 2 20 (253)	Hara. 5	10 14 (107)	22 16 (253)
Kohi. 3	18 17 (107)	f 6 20 (253)	Poutū. 5	14 14 (107)	f 2 16 (253)	Hara. 6	10 10 (107)	22 12 (253)
Kohi. 4	18 13 (107)	f 6 16 (253)	Poutū. 6	14 10 (107)	f 2 12 (253)	Hara. 7	10 06 (107)	22 09 (253)
Kohi. 5	18 09 (107)	f 6 12 (253)	Poutū. 7	14 06 (107)	f 2 08 (253)	Hara. 8	10 02 (107)	22 05 (253)
Kohi. 6	18 05 (107)	f 6 08 (253)	Poutū. 8	14 02 (107)	f 2 04 (253)	Hara. 9	9 58 (107)	22 01 (253)
Kohi. 7	18 02 (107)	f 6 04 (253)	Poutū. 9	13 58 (107)	f 2 01 (253)	Hara. 10	9 54 (107)	21 57 (253)
Kohi. 8	17 58 (107)	f 6 00 (253)	Poutū. 10	13 54 (107)	f 1 57 (253)	Hara. 11	9 50 (107)	21 53 (253)
Kohi. 9	17 54 (107)	f 5 56 (253)	Poutū. 11	13 50 (107)	f 1 53 (253)	Hara. 12	9 46 (107)	21 49 (253)
Kohi. 10	17 50 (107)	f 5 53 (253)	Poutū. 12	13 46 (107)	f 1 49 (253)	Hara. 13	9 42 (107)	21 45 (253)
Kohi. 11	17 46 (107)	f 5 49 (253)	Poutū. 13	13 42 (107)	f 1 45 (253)	Hara. 14	9 38 (107)	21 41 (253)
Kohi. 12	17 42 (107)	f 5 45 (253)	Poutū. 14	13 38 (107)	f 1 41 (253)	Hara. 15	9 34 (107)	21 37 (253)
Kohi. 13	17 38 (107)	f 5 41 (253)	Poutū. 15	13 34 (107)	f 1 37 (253)	Hara. 16	9 30 (107)	21 33 (253)
Kohi. 14	17 34 (107)	f 5 37 (253)	Poutū. 16	13 30 (107)	f 1 33 (253)	Hara. 17	9 26 (107)	21 29 (253)
Kohi. 15	17 30 (107)	f 5 33 (253)	Poutū. 17	13 26 (107)	f 1 29 (253)	Hara. 18	9 23 (107)	21 25 (253)
Kohi. 16	17 26 (107)	f 5 29 (253)	Poutū. 18	13 22 (107)	f 1 25 (253)	Hara. 19	9 19 (107)	21 21 (253)
Kohi. 17	17 22 (107)	f 5 25 (253)	Poutū. 19	13 18 (107)	f 1 21 (253)	Hara. 20	9 15 (107)	21 17 (253)
Kohi. 18	17 18 (107)	f 5 21 (253)	Poutū. 20	13 15 (107)	f 1 17 (253)	Hara. 21	9 11 (107)	21 13 (253)
Kohi. 19	17 14 (107)	f 5 17 (253)	Poutū. 21	13 11 (107)	f 1 13 (253)	Hara. 22	9 07 (107)	21 10 (253)
Kohi. 20	17 10 (107)	f 5 13 (253)	Poutū. 22	13 07 (107)	f 1 09 (253)	Hara. 23	9 03 (107)	21 06 (253)
Kohi. 21	17 07 (107)	f 5 09 (253)	Poutū. 23	13 03 (107)	f 1 05 (253)	Hara. 24	8 59 (107)	21 02 (253)
Kohi. 22	17 03 (107)	f 5 05 (253)	Poutū. 24	12 59 (107)	f 1 02 (253)	Hara. 25	8 55 (107)	20 58 (253)
Kohi. 23	16 59 (107)	f 5 01 (253)	Poutū. 25	12 55 (107)	f 0 58 (253)	Hara. 26	8 51 (107)	20 54 (253)
Kohi. 24	16 55 (107)	f 4 57 (253)	Poutū. 26	12 51 (107)	f 0 54 (253)	Hara. 27	8 47 (107)	20 50 (253)
Kohi. 25	16 51 (107)	f 4 54 (253)	Poutū. 27	12 47 (107)	f 0 50 (253)	Hara. 28	8 43 (107)	20 46 (253)
Kohi. 26	16 47 (107)	f 4 50 (253)	Poutū. 28	12 43 (107)	f 0 46 (253)	Hara. 29	8 39 (107)	20 42 (253)
Kohi. 27	16 43 (107)	f 4 46 (253)	Poutū. 29	12 39 (107)	f 0 42 (253)	Hara. 30	8 35 (107)	20 38 (253)
Kohi. 28	16 39 (107)	f 4 42 (253)	Poutū. 30	12 35 (107)	f 0 38 (253)	Hara. 31	8 31 (107)	20 34 (253)
Kohi. 29	16 35 (107)	f 4 38 (253)	Poutū. 31	12 31 (107)	f 0 34 (253)	Pipi. 1	8 27 (107)	20 30 (253)
Kohi. 30	16 31 (107)	f 4 34 (253)	Pae. 1	12 27 (107)	f 0 30 (253)	Pipi. 2	8 24 (107)	20 26 (253)
Kohi. 31	16 27 (107)	f 4 30 (253)	Pae. 2	12 23 (107)	f 0 26 (253)	Pipi. 3	8 20 (107)	20 22 (253)
Hui. 1	16 23 (107)	f 4 26 (253)	Pae. 3	12 19 (107)	f 0 22 (253)	Pipi. 4	8 16 (107)	20 18 (253)
Hui. 2	16 19 (107)	f 4 22 (253)	Pae. 4	12 16 (107)	f 0 18 (253)	Pipi. 5	8 12 (107)	20 15 (253)
Hui. 3	16 15 (107)	f 4 18 (253)	Pae. 5	12 12 (107)	f 0 14 (253)	Pipi. 6	8 08 (107)	20 11 (253)
Hui. 4	16 11 (107)	f 4 14 (253)	Pae. 6	12 08 (107)	f 0 10 (253)	Pipi. 7	8 04 (107)	20 07 (253)
Hui. 5	16 08 (107)	f 4 10 (253)	Pae. 7	12 04 (107)	f 0 07 (253)	Pipi. 8	8 00 (107)	20 03 (253)
Hui. 6	16 04 (107)	f 4 06 (253)	Pae. 8	12 00 (107)	f 0 03 (253)	Pipi. 9	7 56 (107)	19 59 (253)
Hui. 7	16 00 (107)	f 4 02 (253)	Pae. 9	11 56 (107)	23 59 (253)	Pipi. 10	7 52 (107)	19 55 (253)
Hui. 8	15 56 (107)	f 3 58 (253)	Pae. 10	11 52 (107)	23 55 (253)	Pipi. 11	7 48 (107)	19 51 (253)
Hui. 9	15 52 (107)	f 3 55 (253)	Pae. 11	11 48 (107)	23 51 (253)	Pipi. 12	7 44 (107)	19 47 (253)
Hui. 10	15 48 (107)	f 3 51 (253)	Pae. 12	11 44 (107)	23 47 (253)	Pipi. 13	7 40 (107)	19 43 (253)
Hui. 11	15 44 (107)	f 3 47 (253)	Pae. 13	11 40 (107)	23 43 (253)	Pipi. 14	7 36 (107)	19 39 (253)
Hui. 12	15 40 (107)	f 3 43 (253)	Pae. 14	11 36 (107)	23 39 (253)	Pipi. 15	7 32 (107)	19 35 (253)
Hui. 13	15 36 (107)	f 3 39 (253)	Pae. 15	11 32 (107)	23 35 (253)	Pipi. 16	7 29 (107)	19 31 (253)
Hui. 14	15 32 (107)	f 3 35 (253)	Pae. 16	11 28 (107)	23 31 (253)	Pipi. 17	7 25 (107)	19 27 (253)
Hui. 15	15 28 (107)	f 3 31 (253)	Pae. 17	11 24 (107)	23 27 (253)	Pipi. 18	7 21 (107)	19 23 (253)
Hui. 16	15 24 (107)	f 3 27 (253)	Pae. 18	11 20 (107)	23 23 (253)	Pipi. 19	7 17 (107)	19 19 (253)
Hui. 17	15 20 (107)	f 3 23 (253)	Pae. 19	11 17 (107)	23 19 (253)	Pipi. 20	7 13 (107)	19 16 (253)
Hui. 18	15 16 (107)	f 3 19 (253)	Pae. 20	11 13 (107)	23 15 (253)	Pipi. 21	7 09 (107)	19 12 (253)
Hui. 19	15 12 (107)	f 3 15 (253)	Pae. 21	11 09 (107)	23 11 (253)	Pipi. 22	7 05 (107)	19 08 (253)
Hui. 20	15 09 (107)	f 3 11 (253)	Pae. 22	11 05 (107)	23 08 (253)	Pipi. 23	7 01 (107)	19 04 (253)
Hui. 21	15 05 (107)	f 3 07 (253)	Pae. 23	11 01 (107)	23 04 (253)	Pipi. 24	6 57 (107)	19 00 (253)
Hui. 22	15 01 (107)	f 3 03 (253)	Pae. 24	10 57 (107)	23 00 (253)	Pipi. 25	6 53 (107)	18 56 (253)
Hui. 23	14 57 (107)	f 3 00 (253)	Pae. 25	10 53 (107)	22 56 (253)	Pipi. 26	6 49 (107)	18 52 (253)
Hui. 24	14 53 (107)	f 2 56 (253)	Pae. 26	10 49 (107)	22 52 (253)	Pipi. 27	6 45 (107)	18 48 (253)
Hui. 25	14 49 (107)	f 2 52 (253)	Pae. 27	10 45 (107)	22 48 (253)	Pipi. 28	6 41 (107)	18 44 (253)
Hui. 26	14 45 (107)	f 2 48 (253)	Pae. 28	10 41 (107)	22 44 (253)	Pipi. 29	6 37 (107)	18 40 (253)
Hui. 27	14 41 (107)	f 2 44 (253)	Pae. 29	10 37 (107)	22 40 (253)	Pipi. 30	6 33 (107)	18 36 (253)
Hui. 28	14 37 (107)	f 2 40 (253)	Pae. 30	10 33 (107)	22 36 (253)	Hōngo. 1	6 30 (107)	18 32 (253)
Hui. 29	14 33 (107)	f 2 36 (253)	Hara. 1	10 29 (107)	22 32 (253)	Hōngo. 2	6 26 (107)	18 28 (253)
Poutū. 1	14 29 (107)	f 2 32 (253)	Hara. 2	10 25 (107)	22 28 (253)	Hōngo. 3	6 22 (107)	18 24 (253)
Poutū. 2	14 25 (107)	f 2 28 (253)	Hara. 3	10 22 (107)	22 24 (253)	Hōngo. 4	6 18 (107)	18 20 (253)

Rā	Whiti h m °	Tō h m °	Rā	Whiti h m °	Tō h m °	Rā	Whiti h m °	Tō h m °
Hōngo. 5	6 14 (107)	18 17 (253)	Mahu. 5	2 10 (107)	14 13 (253)	Wh.Ra. 6	p22 06 (107)	10 09 (253)
Hōngo. 6	6 10 (107)	18 13 (253)	Mahu. 6	2 06 (107)	14 09 (253)	Wh.Ra. 7	p22 02 (107)	10 05 (253)
Hōngo. 7	6 06 (107)	18 09 (253)	Mahu. 7	2 02 (107)	14 05 (253)	Wh.Ra. 8	p21 58 (107)	10 01 (253)
Hōngo. 8	6 02 (107)	18 05 (253)	Mahu. 8	1 58 (107)	14 01 (253)	Wh.Ra. 9	p21 55 (107)	9 57 (253)
Hōngo. 9	5 58 (107)	18 01 (253)	Mahu. 9	1 54 (107)	13 57 (253)	Wh.Ra. 10	p21 51 (107)	9 53 (253)
Hōngo. 10	5 54 (107)	17 57 (253)	Mahu. 10	1 50 (107)	13 53 (253)	Wh.Ra. 11	p21 47 (107)	9 49 (253)
Hōngo. 11	5 50 (107)	17 53 (253)	Mahu. 11	1 46 (107)	13 49 (253)	Wh.Ra. 12	p21 43 (107)	9 45 (253)
Hōngo. 12	5 46 (107)	17 49 (253)	Mahu. 12	1 43 (107)	13 45 (253)	Wh.Ra. 13	p21 39 (107)	9 42 (253)
Hōngo. 13	5 42 (107)	17 45 (253)	Mahu. 13	1 39 (107)	13 41 (253)	Wh.Ra. 14	p21 35 (107)	9 38 (253)
Hōngo. 14	5 38 (107)	17 41 (253)	Mahu. 14	1 35 (107)	13 37 (253)	Wh.Ra. 15	p21 31 (107)	9 34 (253)
Hōngo. 15	5 34 (107)	17 37 (253)	Mahu. 15	1 31 (107)	13 33 (253)	Wh.Ra. 16	p21 27 (107)	9 30 (253)
Hōngo. 16	5 31 (107)	17 33 (253)	Mahu. 16	1 27 (107)	13 30 (253)	Wh.Ra. 17	p21 23 (107)	9 26 (253)
Hōngo. 17	5 27 (107)	17 29 (253)	Mahu. 17	1 23 (107)	13 26 (253)	Wh.Ra. 18	p21 19 (107)	9 22 (253)
Hōngo. 18	5 23 (107)	17 25 (253)	Mahu. 18	1 19 (107)	13 22 (253)	Wh.Ra. 19	p21 15 (107)	9 18 (253)
Hōngo. 19	5 19 (107)	17 22 (253)	Mahu. 19	1 15 (107)	13 18 (253)	Wh.Ra. 20	p21 11 (107)	9 14 (253)
Hōngo. 20	5 15 (107)	17 18 (253)	Mahu. 20	1 11 (107)	13 14 (253)	Wh.Ra. 21	p21 07 (107)	9 10 (253)
Hōngo. 21	5 11 (107)	17 14 (253)	Mahu. 21	1 07 (107)	13 10 (253)	Wh.Ra. 22	p21 03 (107)	9 06 (253)
Hōngo. 22	5 07 (107)	17 10 (253)	Mahu. 22	1 03 (107)	13 06 (253)	Wh.Ra. 23	p20 59 (107)	9 02 (253)
Hōngo. 23	5 03 (107)	17 06 (253)	Mahu. 23	0 59 (107)	13 02 (253)	Wh.Ra. 24	p20 56 (107)	8 58 (253)
Hōngo. 24	4 59 (107)	17 02 (253)	Mahu. 24	0 55 (107)	12 58 (253)	Wh.Ra. 25	p20 52 (107)	8 54 (253)
Hōngo. 25	4 55 (107)	16 58 (253)	Mahu. 25	0 51 (107)	12 54 (253)	Wh.Ra. 26	p20 48 (107)	8 50 (253)
Hōngo. 26	4 51 (107)	16 54 (253)	Mahu. 26	0 48 (107)	12 50 (253)	Wh.Ra. 27	p20 44 (107)	8 47 (253)
Hōngo. 27	4 47 (107)	16 50 (253)	Mahu. 27	0 44 (107)	12 46 (253)	Wh.Ra. 28	p20 40 (107)	8 43 (253)
Hōngo. 28	4 43 (107)	16 46 (253)	Mahu. 28	0 40 (107)	12 42 (253)	Wh.Ra. 29	p20 36 (107)	8 39 (253)
Hōngo. 29	4 39 (107)	16 42 (253)	Mahu. 29	0 36 (107)	12 38 (253)	Wh.Ra. 30	p20 32 (107)	8 35 (253)
Hōngo. 30	4 36 (107)	16 38 (253)	Mahu. 30	0 32 (107)	12 35 (253)	Haki. 1	p20 28 (107)	8 31 (253)
Hōngo. 31	4 32 (107)	16 34 (253)	Wh.Nu. 1	0 28 (107)	12 31 (253)	Haki. 2	p20 24 (107)	8 27 (253)
Here. 1	4 28 (107)	16 30 (253)	Wh.Nu. 2	0 24 (107)	12 27 (253)	Haki. 3	p20 20 (107)	8 23 (253)
Here. 2	4 24 (107)	16 26 (253)	Wh.Nu. 3	0 20 (107)	12 23 (253)	Haki. 4	p20 16 (107)	8 19 (253)
Here. 3	4 20 (107)	16 23 (253)	Wh.Nu. 4	0 16 (107)	12 19 (253)	Haki. 5	p20 12 (107)	8 15 (253)
Here. 4	4 16 (107)	16 19 (253)	Wh.Nu. 5	0 12 (107)	12 15 (253)	Haki. 6	p20 08 (107)	8 11 (253)
Here. 5	4 12 (107)	16 15 (253)	Wh.Nu. 6	0 08 (107)	12 11 (253)	Haki. 7	p20 04 (107)	8 07 (253)
Here. 6	4 08 (107)	16 11 (253)	Wh.Nu. 7	0 04 (107)	12 07 (253)	Haki. 8	p20 01 (107)	8 03 (253)
Here. 7	4 04 (107)	16 07 (253)	Wh.Nu. 8	0 00 (107)	12 03 (253)	Haki. 9	p19 57 (107)	7 59 (253)
Here. 8	4 00 (107)	16 03 (253)	Wh.Nu. 9	p23 56 (107)	11 59 (253)	Haki. 10	p19 53 (107)	7 55 (253)
Here. 9	3 56 (107)	15 59 (253)	Wh.Nu. 10	p23 52 (107)	11 55 (253)	Haki. 11	p19 49 (107)	7 51 (253)
Here. 10	3 52 (107)	15 55 (253)	Wh.Nu. 11	p23 49 (107)	11 51 (253)	Haki. 12	p19 45 (107)	7 48 (253)
Here. 11	3 48 (107)	15 51 (253)	Wh.Nu. 12	p23 45 (107)	11 47 (253)	Haki. 13	p19 41 (107)	7 44 (253)
Here. 12	3 44 (107)	15 47 (253)	Wh.Nu. 13	p23 41 (107)	11 43 (253)	Haki. 14	p19 37 (107)	7 40 (253)
Here. 13	3 40 (107)	15 43 (253)	Wh.Nu. 14	p23 37 (107)	11 39 (253)	Haki. 15	p19 33 (107)	7 36 (253)
Here. 14	3 37 (107)	15 39 (253)	Wh.Nu. 15	p23 33 (107)	11 36 (253)	Haki. 16	p19 29 (107)	7 32 (253)
Here. 15	3 33 (107)	15 35 (253)	Wh.Nu. 16	p23 29 (107)	11 32 (253)	Haki. 17	p19 25 (107)	7 28 (253)
Here. 16	3 29 (107)	15 31 (253)	Wh.Nu. 17	p23 25 (107)	11 28 (253)	Haki. 18	p19 21 (107)	7 24 (253)
Here. 17	3 25 (107)	15 28 (253)	Wh.Nu. 18	p23 21 (107)	11 24 (253)	Haki. 19	p19 17 (107)	7 20 (253)
Here. 18	3 21 (107)	15 24 (253)	Wh.Nu. 19	p23 17 (107)	11 20 (253)	Haki. 20	p19 13 (107)	7 16 (253)
Here. 19	3 17 (107)	15 20 (253)	Wh.Nu. 20	p23 13 (107)	11 16 (253)	Haki. 21	p19 09 (107)	7 12 (253)
Here. 20	3 13 (107)	15 16 (253)	Wh.Nu. 21	p23 09 (107)	11 12 (253)	Haki. 22	p19 05 (107)	7 08 (253)
Here. 21	3 09 (107)	15 12 (253)	Wh.Nu. 22	p23 05 (107)	11 08 (253)	Haki. 23	p19 02 (107)	7 04 (253)
Here. 22	3 05 (107)	15 08 (253)	Wh.Nu. 23	p23 01 (107)	11 04 (253)	Haki. 24	p18 58 (107)	7 00 (253)
Here. 23	3 01 (107)	15 04 (253)	Wh.Nu. 24	p22 57 (107)	11 00 (253)	Haki. 25	p18 54 (107)	6 56 (253)
Here. 24	2 57 (107)	15 00 (253)	Wh.Nu. 25	p22 53 (107)	10 56 (253)	Haki. 26	p18 50 (107)	6 52 (253)
Here. 25	2 53 (107)	14 56 (253)	Wh.Nu. 26	p22 50 (107)	10 52 (253)	Haki. 27	p18 46 (107)	6 49 (253)
Here. 26	2 49 (107)	14 52 (253)	Wh.Nu. 27	p22 46 (107)	10 48 (253)	Haki. 28	p18 42 (107)	6 45 (253)
Here. 27	2 45 (107)	14 48 (253)	Wh.Nu. 28	p22 42 (107)	10 44 (253)	Haki. 29	p18 38 (107)	6 41 (253)
Here. 28	2 42 (107)	14 44 (253)	Wh.Nu. 29	p22 38 (107)	10 41 (253)	Haki. 30	p18 34 (107)	6 37 (253)
Here. 29	2 38 (107)	14 40 (253)	Wh.Nu. 30	p22 34 (107)	10 37 (253)	Haki. 31	p18 30 (107)	6 33 (253)
Here. 30	2 34 (107)	14 36 (253)	Wh.Nu. 31	p22 30 (107)	10 33 (253)			
Here. 31	2 30 (107)	14 32 (253)	Wh.Ra. 1	p22 26 (107)	10 29 (253)			
Mahu. 1	2 26 (107)	14 29 (253)	Wh.Ra. 2	p22 22 (107)	10 25 (253)			
Mahu. 2	2 22 (107)	14 25 (253)	Wh.Ra. 3	p22 18 (107)	10 21 (253)			
Mahu. 3	2 18 (107)	14 21 (253)	Wh.Ra. 4	p22 14 (107)	10 17 (253)			
Mahu. 4	2 14 (107)	14 17 (253)	Wh.Ra. 5	p22 10 (107)	10 13 (253)			

Rārangi 9: Takurua

Poutū-te-Rangi i te tau 1995

Rā	Whiti h m °	Tō h m °	Rā	Whiti h m °	Tō h m °	Rā	Whiti h m °	Tō h m °
Kohi. 1	7 29 (81)	6 28 (253)	Poutū. 4	3 25 (81)	f 2 24 (253)	Hara. 5	p23 21 (81)	22 20 (253)
Kohi. 2	7 25 (81)	6 24 (253)	Poutū. 5	3 21 (81)	f 2 20 (253)	Hara. 6	p23 17 (81)	22 16 (253)
Kohi. 3	7 21 (81)	f 6 20 (253)	Poutū. 6	3 17 (81)	f 2 16 (253)	Hara. 7	p23 13 (81)	22 12 (253)
Kohi. 4	7 17 (81)	f 6 16 (253)	Poutū. 7	3 13 (81)	f 2 12 (253)	Hara. 8	p23 09 (81)	22 09 (253)
Kohi. 5	7 13 (81)	f 6 12 (253)	Poutū. 8	3 09 (81)	f 2 08 (253)	Hara. 9	p23 05 (81)	22 05 (253)
Kohi. 6	7 09 (81)	f 6 08 (253)	Poutū. 9	3 05 (81)	f 2 04 (253)	Hara. 10	p23 01 (81)	22 01 (253)
Kohi. 7	7 05 (81)	f 6 04 (253)	Poutū. 10	3 01 (81)	f 2 01 (253)	Hara. 11	p22 58 (81)	21 57 (253)
Kohi. 8	7 01 (81)	f 6 00 (253)	Poutū. 11	2 57 (81)	f 1 57 (253)	Hara. 12	p22 54 (81)	21 53 (253)
Kohi. 9	6 57 (81)	f 5 56 (253)	Poutū. 12	2 53 (81)	f 1 53 (253)	Hara. 13	p22 50 (81)	21 49 (253)
Kohi. 10	6 53 (81)	f 5 53 (253)	Poutū. 13	2 50 (81)	f 1 49 (253)	Hara. 14	p22 46 (81)	21 45 (253)
Kohi. 11	6 49 (81)	f 5 49 (253)	Poutū. 14	2 46 (81)	f 1 45 (253)	Hara. 15	p22 42 (81)	21 41 (253)
Kohi. 12	6 45 (81)	f 5 45 (253)	Poutū. 15	2 42 (81)	f 1 41 (253)	Hara. 16	p22 38 (81)	21 37 (253)
Kohi. 13	6 41 (81)	f 5 41 (253)	Poutū. 16	2 38 (81)	f 1 37 (253)	Hara. 17	p22 34 (81)	21 33 (253)
Kohi. 14	6 38 (81)	f 5 37 (253)	Poutū. 17	2 34 (81)	f 1 33 (253)	Hara. 18	p22 30 (81)	21 29 (253)
Kohi. 15	6 34 (81)	f 5 33 (253)	Poutū. 18	2 30 (81)	f 1 29 (253)	Hara. 19	p22 26 (81)	21 25 (253)
Kohi. 16	6 30 (81)	f 5 29 (253)	Poutū. 19	2 26 (81)	f 1 25 (253)	Hara. 20	p22 22 (81)	21 21 (253)
Kohi. 17	6 26 (81)	f 5 25 (253)	Poutū. 20	2 22 (81)	f 1 21 (253)	Hara. 21	p22 18 (81)	21 17 (253)
Kohi. 18	6 22 (81)	f 5 21 (253)	Poutū. 21	2 18 (81)	f 1 17 (253)	Hara. 22	p22 14 (81)	21 13 (253)
Kohi. 19	6 18 (81)	f 5 17 (253)	Poutū. 22	2 14 (81)	f 1 13 (253)	Hara. 23	p22 10 (81)	21 10 (253)
Kohi. 20	6 14 (81)	f 5 13 (253)	Poutū. 23	2 10 (81)	f 1 09 (253)	Hara. 24	p22 06 (81)	21 06 (253)
Kohi. 21	6 10 (81)	f 5 09 (253)	Poutū. 24	2 06 (81)	f 1 05 (253)	Hara. 25	p22 03 (81)	21 02 (253)
Kohi. 22	6 06 (81)	f 5 05 (253)	Poutū. 25	2 02 (81)	f 1 02 (253)	Hara. 26	p21 59 (81)	20 58 (253)
Kohi. 23	6 02 (81)	f 5 01 (253)	Poutū. 26	1 58 (81)	f 0 58 (253)	Hara. 27	p21 55 (81)	20 54 (253)
Kohi. 24	5 58 (81)	f 4 57 (253)	Poutū. 27	1 54 (81)	f 0 54 (253)	Hara. 28	p21 51 (81)	20 50 (253)
Kohi. 25	5 54 (81)	f 4 54 (253)	Poutū. 28	1 51 (81)	f 0 50 (253)	Hara. 29	p21 47 (81)	20 46 (253)
Kohi. 26	5 50 (81)	f 4 50 (253)	Poutū. 29	1 47 (81)	f 0 46 (253)	Hara. 30	p21 43 (81)	20 42 (253)
Kohi. 27	5 46 (81)	f 4 46 (253)	Poutū. 30	1 43 (81)	f 0 42 (253)	Hara. 31	p21 39 (81)	20 38 (253)
Kohi. 28	5 42 (81)	f 4 42 (253)	Poutū. 31	1 39 (81)	f 0 38 (253)	Pipi. 1	p21 35 (81)	20 34 (253)
Kohi. 29	5 39 (81)	f 4 38 (253)	Pae. 1	1 35 (81)	f 0 34 (253)	Pipi. 2	p21 31 (81)	20 30 (253)
Kohi. 30	5 35 (81)	f 4 34 (253)	Pae. 2	1 31 (81)	f 0 30 (253)	Pipi. 3	p21 27 (81)	20 26 (253)
Kohi. 31	5 31 (81)	f 4 30 (253)	Pae. 3	1 27 (81)	f 0 26 (253)	Pipi. 4	p21 23 (81)	20 22 (253)
Hui. 1	5 27 (81)	f 4 26 (253)	Pae. 4	1 23 (81)	f 0 22 (253)	Pipi. 5	p21 19 (81)	20 18 (253)
Hui. 2	5 23 (81)	f 4 22 (253)	Pae. 5	1 19 (81)	f 0 18 (253)	Pipi. 6	p21 15 (81)	20 15 (253)
Hui. 3	5 19 (81)	f 4 18 (253)	Pae. 6	1 15 (81)	f 0 14 (253)	Pipi. 7	p21 11 (81)	20 11 (253)
Hui. 4	5 15 (81)	f 4 14 (253)	Pae. 7	1 11 (81)	f 0 10 (253)	Pipi. 8	p21 07 (81)	20 07 (253)
Hui. 5	5 11 (81)	f 4 10 (253)	Pae. 8	1 07 (81)	f 0 07 (253)	Pipi. 9	p21 04 (81)	20 03 (253)
Hui. 6	5 07 (81)	f 4 06 (253)	Pae. 9	1 03 (81)	f 0 03 (253)	Pipi. 10	p21 00 (81)	19 59 (253)
Hui. 7	5 03 (81)	f 4 02 (253)	Pae. 10	0 59 (81)	23 59 (253)	Pipi. 11	p20 56 (81)	19 55 (253)
Hui. 8	4 59 (81)	f 3 58 (253)	Pae. 11	0 56 (81)	23 55 (253)	Pipi. 12	p20 52 (81)	19 51 (253)
Hui. 9	4 55 (81)	f 3 55 (253)	Pae. 12	0 52 (81)	23 51 (253)	Pipi. 13	p20 48 (81)	19 47 (253)
Hui. 10	4 51 (81)	f 3 51 (253)	Pae. 13	0 48 (81)	23 47 (253)	Pipi. 14	p20 44 (81)	19 43 (253)
Hui. 11	4 47 (81)	f 3 47 (253)	Pae. 14	0 44 (81)	23 43 (253)	Pipi. 15	p20 40 (81)	19 39 (253)
Hui. 12	4 44 (81)	f 3 43 (253)	Pae. 15	0 40 (81)	23 39 (253)	Pipi. 16	p20 36 (81)	19 35 (253)
Hui. 13	4 40 (81)	f 3 39 (253)	Pae. 16	0 36 (81)	23 35 (253)	Pipi. 17	p20 32 (81)	19 31 (253)
Hui. 14	4 36 (81)	f 3 35 (253)	Pae. 17	0 32 (81)	23 31 (253)	Pipi. 18	p20 28 (81)	19 27 (253)
Hui. 15	4 32 (81)	f 3 31 (253)	Pae. 18	0 28 (81)	23 27 (253)	Pipi. 19	p20 24 (81)	19 23 (253)
Hui. 16	4 28 (81)	f 3 27 (253)	Pae. 19	0 24 (81)	23 23 (253)	Pipi. 20	p20 20 (81)	19 19 (253)
Hui. 17	4 24 (81)	f 3 23 (253)	Pae. 20	0 20 (81)	23 19 (253)	Pipi. 21	p20 16 (81)	19 16 (253)
Hui. 18	4 20 (81)	f 3 19 (253)	Pae. 21	0 16 (81)	23 15 (253)	Pipi. 22	p20 12 (81)	19 12 (253)
Hui. 19	4 16 (81)	f 3 15 (253)	Pae. 22	0 12 (81)	23 11 (253)	Pipi. 23	p20 09 (81)	19 08 (253)
Hui. 20	4 12 (81)	f 3 11 (253)	Pae. 23	0 08 (81)	23 08 (253)	Pipi. 24	p20 05 (81)	19 04 (253)
Hui. 21	4 08 (81)	f 3 07 (253)	Pae. 24	0 04 (81)	23 04 (253)	Pipi. 25	p20 01 (81)	19 00 (253)
Hui. 22	4 04 (81)	f 3 03 (253)	Pae. 25	0 00 (81)	23 00 (253)	Pipi. 26	p19 57 (81)	18 56 (253)
Hui. 23	4 00 (81)	f 3 00 (253)	Pae. 26	p23 57 (81)	22 56 (253)	Pipi. 27	p19 53 (81)	18 52 (253)
Hui. 24	3 56 (81)	f 2 56 (253)	Pae. 27	p23 53 (81)	22 52 (253)	Pipi. 28	p19 49 (81)	18 48 (253)
Hui. 25	3 52 (81)	f 2 52 (253)	Pae. 28	p23 49 (81)	22 48 (253)	Pipi. 29	p19 45 (81)	18 44 (253)
Hui. 26	3 48 (81)	f 2 48 (253)	Pae. 29	p23 45 (81)	22 44 (253)	Pipi. 30	p19 41 (81)	18 40 (253)
Hui. 27	3 45 (81)	f 2 44 (253)	Pae. 30	p23 41 (81)	22 40 (253)	Hōngo. 1	p19 37 (81)	18 36 (253)
Hui. 28	3 41 (81)	f 2 40 (253)	Hara. 1	p23 37 (81)	22 36 (253)	Hōngo. 2	p19 33 (81)	18 32 (253)
Poutū. 1	3 37 (81)	f 2 36 (253)	Hara. 2	p23 33 (81)	22 32 (253)	Hōngo. 3	p19 29 (81)	18 28 (253)
Poutū. 2	3 33 (81)	f 2 32 (253)	Hara. 3	p23 29 (81)	22 28 (253)	Hōngo. 4	p19 25 (81)	18 24 (253)
Poutū. 3	3 29 (81)	f 2 28 (253)	Hara. 4	p23 25 (81)	22 24 (253)	Hōngo. 5	p19 21 (81)	18 20 (253)

Rā	Whiti h m °	Tō h m °	Rā	Whiti h m °	Tō h m °	Rā	Whiti h m °	Tō h m °
Hōngo. 6	p19 17 (81)	18 17 (253)	Mahu. 5	15 14 (81)	14 13 (253)	Wh.Ra. 6	11 10 (81)	10 09 (253)
Hōngo. 7	p19 13 (81)	18 13 (253)	Mahu. 6	15 10 (81)	14 09 (253)	Wh.Ra. 7	11 06 (81)	10 05 (253)
Hōngo. 8	p19 10 (81)	18 09 (253)	Mahu. 7	15 06 (81)	14 05 (253)	Wh.Ra. 8	11 02 (81)	10 01 (253)
Hōngo. 9	p19 06 (81)	18 05 (253)	Mahu. 8	15 02 (81)	14 01 (253)	Wh.Ra. 9	10 58 (81)	9 57 (253)
Hōngo. 10	p19 02 (81)	18 01 (253)	Mahu. 9	14 58 (81)	13 57 (253)	Wh.Ra. 10	10 54 (81)	9 53 (253)
Hōngo. 11	p18 58 (81)	17 57 (253)	Mahu. 10	14 54 (81)	13 53 (253)	Wh.Ra. 11	10 50 (81)	9 49 (253)
Hōngo. 12	p18 54 (81)	17 53 (253)	Mahu. 11	14 50 (81)	13 49 (253)	Wh.Ra. 12	10 46 (81)	9 45 (253)
Hōngo. 13	p18 50 (81)	17 49 (253)	Mahu. 12	14 46 (81)	13 45 (253)	Wh.Ra. 13	10 42 (81)	9 42 (253)
Hōngo. 14	p18 46 (81)	17 45 (253)	Mahu. 13	14 42 (81)	13 41 (253)	Wh.Ra. 14	10 38 (81)	9 38 (253)
Hōngo. 15	p18 42 (81)	17 41 (253)	Mahu. 14	14 38 (81)	13 37 (253)	Wh.Ra. 15	10 34 (81)	9 34 (253)
Hōngo. 16	p18 38 (81)	17 37 (253)	Mahu. 15	14 34 (81)	13 33 (253)	Wh.Ra. 16	10 31 (81)	9 30 (253)
Hōngo. 17	p18 34 (81)	17 33 (253)	Mahu. 16	14 30 (81)	13 30 (253)	Wh.Ra. 17	10 27 (81)	9 26 (253)
Hōngo. 18	p18 30 (81)	17 29 (253)	Mahu. 17	14 26 (81)	13 26 (253)	Wh.Ra. 18	10 23 (81)	9 22 (253)
Hōngo. 19	p18 26 (81)	17 25 (253)	Mahu. 18	14 23 (81)	13 22 (253)	Wh.Ra. 19	10 19 (81)	9 18 (253)
Hōngo. 20	p18 22 (81)	17 22 (253)	Mahu. 19	14 19 (81)	13 18 (253)	Wh.Ra. 20	10 15 (81)	9 14 (253)
Hōngo. 21	p18 18 (81)	17 18 (253)	Mahu. 20	14 15 (81)	13 14 (253)	Wh.Ra. 21	10 11 (81)	9 10 (253)
Hōngo. 22	p18 14 (81)	17 14 (253)	Mahu. 21	14 11 (81)	13 10 (253)	Wh.Ra. 22	10 07 (81)	9 06 (253)
Hōngo. 23	p18 10 (81)	17 10 (253)	Mahu. 22	14 07 (81)	13 06 (253)	Wh.Ra. 23	10 03 (81)	9 02 (253)
Hōngo. 24	p18 07 (81)	17 06 (253)	Mahu. 23	14 03 (81)	13 02 (253)	Wh.Ra. 24	9 59 (81)	8 58 (253)
Hōngo. 25	p18 03 (81)	17 02 (253)	Mahu. 24	13 59 (81)	12 58 (253)	Wh.Ra. 25	9 55 (81)	8 54 (253)
Hōngo. 26	p17 59 (81)	16 58 (253)	Mahu. 25	13 55 (81)	12 54 (253)	Wh.Ra. 26	9 51 (81)	8 50 (253)
Hōngo. 27	p17 55 (81)	16 54 (253)	Mahu. 26	13 51 (81)	12 50 (253)	Wh.Ra. 27	9 47 (81)	8 47 (253)
Hōngo. 28	p17 51 (81)	16 50 (253)	Mahu. 27	13 47 (81)	12 46 (253)	Wh.Ra. 28	9 43 (81)	8 43 (253)
Hōngo. 29	p17 47 (81)	16 46 (253)	Mahu. 28	13 43 (81)	12 42 (253)	Wh.Ra. 29	9 39 (81)	8 39 (253)
Hōngo. 30	p17 43 (81)	16 42 (253)	Mahu. 29	13 39 (81)	12 38 (253)	Wh.Ra. 30	9 35 (81)	8 35 (253)
Hōngo. 31	p17 39 (81)	16 38 (253)	Mahu. 30	13 35 (81)	12 35 (253)	Haki. 1	9 32 (81)	8 31 (253)
Here. 1	p17 35 (81)	16 34 (253)	Wh.Nu. 1	13 31 (81)	12 31 (253)	Haki. 2	9 28 (81)	8 27 (253)
Here. 2	p17 31 (81)	16 30 (253)	Wh.Nu. 2	13 27 (81)	12 27 (253)	Haki. 3	9 24 (81)	8 23 (253)
Here. 3	p17 27 (81)	16 26 (253)	Wh.Nu. 3	13 24 (81)	12 23 (253)	Haki. 4	9 20 (81)	8 19 (253)
Here. 4	p17 23 (81)	16 23 (253)	Wh.Nu. 4	13 20 (81)	12 19 (253)	Haki. 5	9 16 (81)	8 15 (253)
Here. 5	p17 19 (81)	16 19 (253)	Wh.Nu. 5	13 16 (81)	12 15 (253)	Haki. 6	9 12 (81)	8 11 (253)
Here. 6	p17 16 (81)	16 15 (253)	Wh.Nu. 6	13 12 (81)	12 11 (253)	Haki. 7	9 08 (81)	8 07 (253)
Here. 7	p17 12 (81)	16 11 (253)	Wh.Nu. 7	13 08 (81)	12 07 (253)	Haki. 8	9 04 (81)	8 03 (253)
Here. 8	p17 08 (81)	16 07 (253)	Wh.Nu. 8	13 04 (81)	12 03 (253)	Haki. 9	9 00 (81)	7 59 (253)
Here. 9	p17 04 (81)	16 03 (253)	Wh.Nu. 9	13 00 (81)	11 59 (253)	Haki. 10	8 56 (81)	7 55 (253)
Here. 10	p17 00 (81)	15 59 (253)	Wh.Nu. 10	12 56 (81)	11 55 (253)	Haki. 11	8 52 (81)	7 51 (253)
Here. 11	p16 56 (81)	15 55 (253)	Wh.Nu. 11	12 52 (81)	11 51 (253)	Haki. 12	8 48 (81)	7 48 (253)
Here. 12	p16 52 (81)	15 51 (253)	Wh.Nu. 12	12 48 (81)	11 47 (253)	Haki. 13	8 44 (81)	7 44 (253)
Here. 13	p16 48 (81)	15 47 (253)	Wh.Nu. 13	12 44 (81)	11 43 (253)	Haki. 14	8 40 (81)	7 40 (253)
Here. 14	p16 44 (81)	15 43 (253)	Wh.Nu. 14	12 40 (81)	11 39 (253)	Haki. 15	8 36 (81)	7 36 (253)
Here. 15	p16 40 (81)	15 39 (253)	Wh.Nu. 15	12 36 (81)	11 36 (253)	Haki. 16	8 33 (81)	7 32 (253)
Here. 16	p16 36 (81)	15 35 (253)	Wh.Nu. 16	12 32 (81)	11 32 (253)	Haki. 17	8 29 (81)	7 28 (253)
Here. 17	p16 32 (81)	15 31 (253)	Wh.Nu. 17	12 28 (81)	11 28 (253)	Haki. 18	8 25 (81)	7 24 (253)
Here. 18	p16 28 (81)	15 28 (253)	Wh.Nu. 18	12 25 (81)	11 24 (253)	Haki. 19	8 21 (81)	7 20 (253)
Here. 19	p16 24 (81)	15 24 (253)	Wh.Nu. 19	12 21 (81)	11 20 (253)	Haki. 20	8 17 (81)	7 16 (253)
Here. 20	p16 20 (81)	15 20 (253)	Wh.Nu. 20	12 17 (81)	11 16 (253)	Haki. 21	8 13 (81)	7 12 (253)
Here. 21	p16 17 (81)	15 16 (253)	Wh.Nu. 21	12 13 (81)	11 12 (253)	Haki. 22	8 09 (81)	7 08 (253)
Here. 22	p16 13 (81)	15 12 (253)	Wh.Nu. 22	12 09 (81)	11 08 (253)	Haki. 23	8 05 (81)	7 04 (253)
Here. 23	p16 09 (81)	15 08 (253)	Wh.Nu. 23	12 05 (81)	11 04 (253)	Haki. 24	8 01 (81)	7 00 (253)
Here. 24	p16 05 (81)	15 04 (253)	Wh.Nu. 24	12 01 (81)	11 00 (253)	Haki. 25	7 57 (81)	6 56 (253)
Here. 25	p16 01 (81)	15 00 (253)	Wh.Nu. 25	11 57 (81)	10 56 (253)	Haki. 26	7 53 (81)	6 52 (253)
Here. 26	p15 57 (81)	14 56 (253)	Wh.Nu. 26	11 53 (81)	10 52 (253)	Haki. 27	7 49 (81)	6 49 (253)
Here. 27	p15 53 (81)	14 52 (253)	Wh.Nu. 27	11 49 (81)	10 48 (253)	Haki. 28	7 45 (81)	6 45 (253)
Here. 28	p15 49 (81)	14 48 (253)	Wh.Nu. 28	11 45 (81)	10 44 (253)	Haki. 29	7 41 (81)	6 41 (253)
Here. 29	p15 45 (81)	14 44 (253)	Wh.Nu. 29	11 41 (81)	10 41 (253)	Haki. 30	7 38 (81)	6 37 (253)
Here. 30	p15 41 (81)	14 40 (253)	Wh.Nu. 30	11 37 (81)	10 37 (253)			
Here. 31	p15 37 (81)	14 36 (253)	Wh.Nu. 31	11 33 (81)	10 33 (253)			
Mahu. 1	p15 29 (81)	14 29 (253)	Wh.Ra. 1	11 29 (81)	10 29 (253)			
Mahu. 2	p15 25 (81)	14 25 (253)	Wh.Ra. 2	11 26 (81)	10 25 (253)			
Mahu. 3	p15 21 (81)	14 21 (253)	Wh.Ra. 3	11 22 (81)	10 21 (253)			
Mahu. 4	p15 18 (81)	14 17 (253)	Wh.Ra. 4	11 18 (81)	10 17 (253)			
			Wh.Ra. 5	11 14 (81)	10 13 (253)			

Rārangi 10: Poutū-te-Rangi

Āpītitanga V

Tā Te GPS Wāhi Rere

E whai ake nei ngā wāhi i rere ai te waka hourua a Te Aurere i tāna haerenga i Hawaiki ki Rarotonga i te marama o Pipiri, 1995. Ko te nuinga o ēnei nama ka puta i te GPS nō te pōti tautoko o Potzalana. Kua tohungia ngā mea e tata ana ki te whitinga me te tōnga o te rā.

Rā	Wā	Latt.	Long.
1-6-95	12:00	21°19' N	157°53' W
1-6-95	16:00	20°42' N	157°36' W
1-6-95	21:00	20°23' N	157°28' W
2-6-95	00:25	20°05' N	157°24' W
2-6-95	06:00	19°39' N	157°20' W
2-6-95	08:00	19°26' N	157°17' W
2-6-95	12:00	19°10' N	157°13' W
2-6-95	16:38	18°53' N	157°11' W
2-6-95	20:00	18°47' N	157°06' W
2-6-95	22:22	18°42' N	157°04' W
3-6-95	00:44	18°39' N	157°04' W
3-6-95	05:15	18°26' N	157°02' W
3-6-95	06:00	18°24' N	157°02' W
3-6-95	08:00	18°12' N	157°02' W
3-6-95	12:00	17°46' N	157°00' W
3-6-95	18:48	17°11' N	156°53' W
3-6-95	20:13	17°53' N	156°52' W
3-6-95	23:12	16°45' N	156°48' W
4-6-95	00:47	16°36' N	156°46' W
4-6-95	06:00	16°07' N	156°38' W
4-6-95	12:11	15°27' N	156°31' W
4-6-95	16:37	15°02' N	156°29' W
4-6-95	20:59	14°33' N	156°24' W
5-6-95	00:12	14°12' N	156°22' W
5-6-95	06:37	13°31' N	156°14' W
5-6-95	12:54	12°51' N	156°05' W
5-6-95	18:30	12°12' N	156°04' W
6-6-95	00:34	11°36' N	155°58' W
6-6-95	06:37	11°11' N	155°50' W

Rā	Wā	Latt.	Long.
6-6-95	11:38	10°41' N	155°41' W
6-6-95	16:42	10°12' N	155°34' W
6-6-95	21:37	09°43' N	155°27' W
7-6-95	00:14	09°28' N	155°24' W
7-6-95	03:06	09°11' N	155°17' W
7-6-95	13:40	08°29' N	155°21' W
7-6-95	18:60	08°16' N	155°36' W
7-6-95	19:23	08°28' N	155°21' W
8-6-95*	17:30	06°57' N	154°53' W
9-6-95*	07:08	06°34' N	154°32' W
9-6-95*	15:30	06°10' N	154°14' W
10-6-95*	08:05	05°30' N	154°16' W
10-6-95*	17:30	05°35' N	153°56' W
11-6-95	02:48	05°08' N	154°09' W
11-6-95	06:04	04°57' N	154°15' W
11-6-95	09:41	04°47' N	154°20' W
11-6-95	17:08	04°28' N	154°28' W
11-6-95	20:07	04°23' N	154°32' W
12-6-95	02:18	04°10' N	154°37' W
12-6-95	05:39	04°05' N	154°40' W
12-6-95	16:06	03°52' N	154°48' W
12-6-95	19:27	03°55' N	154°38' W
13-6-95	01:14	04°02' N	154°25' W
13-6-95	09:04	04°10' N	154°13' W
13-6-95	14:38	04°09' N	154°11' W
13-6-95	16:54	04°08' N	154°11' W
13-6-95	21:00	04°03' N	154°11' W
14-6-95	02:00	03°49' N	154°04' W
14-6-95	05:50	03°36' N	154°00' W

Rā	Wā	Latt.	Long.
14-6-95	13:10	03°05' N	154°07' W
14-6-95	16:21	02°55' N	154°12' W
14-6-95	18:34	02°48' N	154°16' W
14-6-95	19:28	02°45' N	154°18' W
14-6-95	23:10	02°34' N	154°27' W
15-6-95	00:52	02°30' N	154°32' W
15-6-95	05:36	02°26' N	154°45' W
15-6-95	15:07	02°07' N	155°05' W
15-6-95	18:40	01°59' N	155°12' W
15-6-95	21:04	01°49' N	155°17' W
16-6-95	02:00	01°30' N	155°25' W
16-6-95	05:05	01°21' N	155°28' W
16-6-95*	07:06	01°08' N	155°32' W
16-6-95*	16:56	00°11' N	155°50' W
16-6-95	18:07	00°17' S	155°40' W
17-6-95	02:49	00°36' S	155°48' W
17-6-95	06:28	00°59' S	155°45' W
17-6-95*	07:32	01°21' S	155°48' W
17-6-95*	17:34	02°08' S	155°41' W
18-6-95*	07:23	03°23' S	155°41' W
18-6-95*	11:20	03°42' S	155°37' W
18-6-95*	13:30	03°49' S	155°37' W
18-6-95	16:42	03°58' S	155°39' W
18-6-95	20:08	04°18' S	155°40' W
19-6-95	00:06	04°39' S	155°41' W
19-6-95	02:00	04°51' S	155°43' W
19-6-95	04:43	05°05' S	155°43' W
19-6-95	06:55	05°16' S	155°42' W
19-6-95	11:00	05°38' S	155°41' W
19-6-95	17:30	06°17' S	155°42' W
19-6-95	18:29	06°24' S	155°42' W
19-6-95	22:25	06°46' S	155°40' W
20-6-95	01:48	07°03' S	155°40' W
20-6-95	07:00	07°21' S	155°43' W
20-6-95	10:02	07°29' S	155°47' W
20-6-95	11:00	07°33' S	155°48' W
20-6-95	18:50	07°58' S	156°04' W
21-6-95	07:38	07°59' S	156°16' W
21-6-95		08°16' S	156°16' W
22-6-95	06:42	08°22' S	156°09' W
22-6-95	15:51	08°27' S	156°04' W
22-6-95	16:00	08°27' S	156°03' W
22-6-95	21:25	08°29' S	155°43' W

Rā	Wā	Latt.	Long.
23-6-95	01:56	08°32' S	155°31' W
23-6-95	06:55	08°22' S	155°08' W
23-6-95	12:03	08°36' S	155°17' W
23-6-95	17:04	08°54' S	155°30' W
24-6-95	06:30	09°52' S	155°56' W
24-6-95	10:37	10°15' S	155°57' W
24-6-95	14:14	10°33' S	155°59' W
24-6-95	18:04	10°52' S	156°03' W
25-6-95	02:02	11°32' S	156°06' W
25-6-95	05:13	11°48' S	156°08' W
25-6-95*	07:40	12°00' S	156°08' W
25-6-95	09:20	12°10' S	156°10' W
25-6-95*	16:53	12°54' S	156°16' W
25-6-95	18:03	13°01' S	156°18' W
25-6-95	21:48	13°19' S	156°20' W
26-6-95	00:30	13°35' S	156°23' W
26-6-95*	07:40	14°07' S	156°10' W
26-6-95	08:08	14°11' S	156°34' W
26-6-95	15:46	14°51' S	156°33' W
26-6-95*	16:45	14°56' S	156°23' W
26-6-95	23:20	15°27' S	156°45' W
27-6-95	02:06	15°40' S	156°51' W
27-6-95	06:11	15°58' S	156°59' W
27-6-95*	07:37	16°03' S	157°01' W
27-6-95	13:59	16°26' S	157°18' W
27-6-95*	16:50	16°36' S	157°28' W
27-6-95	18:53	16°45' S	157°35' W
27-6-95*	20:57	16°53' S	157°39' W
28-6-95	00:48	17°12' S	157°44' W
28-6-95	07:09	17°45' S	157°52' W
28-6-95*	07:55	17°49' S	157°53' W
28-6-95	12:51	18°16' S	158°00' W
28-6-95*	16:54	18°37' S	158°11' W
28-6-95	23:02	19°13' S	158°25' W
29-6-95*	01:00	19°23' S	158°28' W
29-6-95*	05:30	19°55' S	158°49' W
29-6-95*	09:00	20°17' S	158°58' W
29-6-95*	12:00	20°35' S	159°06' W
29-6-95*	16:00	20°56' S	159°14' W
29-6-95*	18:45	21°03' S	159°26' W

Rārangi 11: Tā te GPS Wāhi Rere

* Nō te GPS i runga kē i a Te Aurere

Tā Te Kaiwhakaterere Wāhi Rere

E whai ake nei ngā wāhi i rere ai te waka hourua o Te Aurere i tāna haerenga i Hawaiki ki Rarotonga i te marama o Pipiri, 1995. Ko ēnei nama ka puta i tā te tirohanga a te kaiwhakaterere waka.

Rā	Wā	Tere	Hau	Au moana	Latt.	Long.
1-6-95	ata					
1-6-95	ahiahi					
2-6-95	ata	5	NE 8-10	NE 1-2	19°58' N	11 E
2-6-95	ahiahi	4.5	E 10	E 1-2	19°11' N	11 E
3-6-95	ata	4.5	ESE 10-15	E 1-2	18°21' N	16 E
3-6-95	ahiahi	6.5	E 15	E 1-2	17°08' N	16 E
4-6-95	ata	7	E 10-15	E 0.5	15°50' N	16 E
4-6-95	ahiahi	7	E 15	E 1-2	14°32' N	16 E
5-6-95	ata	7	E 15-18	E 1	13°12' N	8 E
5-6-95	ahiahi	7	E 15+	E 1	11°54' N	8 E
6-6-95	ata	6.5	E 10	E 0.5	10°51' N	10 E
6-6-95	ahiahi	6	E 5-8	E 0.5	09°44' N	10 E
7-6-95	ata	6.5	E 20-25	E,NE	08°48' N	8 E
7-6-95	ahiahi	4.5	SE 5	NE,E,SE 0.5-2	08°06' N	0 E
8-6-95	ata	5	S 0-5	NE, E, SE 0.5	07°02' N	3 W
8-6-95	ahiahi	5	S 5-10	SSE 1	06°17' N	3 W
9-6-95	ata	4	SSE 5	E 0.5-1	05°38' N	11 W
9-6-95	ahiahi	3.5	ESE 5-8	NE,E,SE 0.5-1	04°56' N	25 W
10-6-95	ata	3	E 0-5	E, NE, SE 0.5	04°32' N	40 W
10-6-95	ahiahi	2.5	ESE 5	ESE 0.5	04°31' N	23 W
11-6-95	ata	4	SE 5-10	SSE 0.5	03°46' N	57 W
11-6-95	ahiahi	3.5	ESE, SE ? 0-5	S, SE,NE, E, 0.5	03°11' N	78 W
12-6-95	ata	2.5	ESE 5	SE 0.5	02°48' N	92 W
12-6-95	ahiahi	2.5	S-SSE 5-8	S 1.5 SE, E, NE 1	02°29' N	82 W
13-6-95	ata	2.5	SSE 2-5	NE 1, S, E, SE 0.5	02°29' N	62 W
13-6-95	ahiahi	1.5	āwhio	NE, E 0-1	02°13' N	53 W
14-6-95	ata	2.5	E 8-10	E 1	01°38' N	30 W
14-6-95	ahiahi	3.5	ESE 5	NE, E, SE 0.5	00°50' N	21 W
15-6-95	ata	3	kore	NE 0.5	00°29' N	27 W
15-6-95	ahiahi	3	E 5-10	SE 1	00°12' N	23 W
16-6-95	ata	4.5	ESE 15-20	SE 1-2	01°08' S	17 W
16-6-95	ahiahi	5.5	E 15-20	SE, E 2	02°21' S	2 W
17-6-95	ata	6	E 15-20	E 2.5	01°21' S	155°48' W
17-6-95	ahiahi	6	E 10-15	E 1.5	02°08' S	155°41' W
18-6-95	ata	3.5	E 5	E 1.5	03°11' S	125 W
18-6-95	ahiahi	6	ENE 15-20	E 0.5	03°49' S	155°37' W

Rā	Wā	Tere	Hau	Au moana	Latt.	Long.
19-6-95	ata	5.5	E 15	E 1-2	05°19' S	108 W
19-6-95	ahiahi	6.5	E 15	E 2-4	06°25' S	86 W
20-6-95	ata	4.5	ESE 5-10	E 1	07°27' S	84 W
20-6-95	ahiahi	5.5	NE 12-15	NE, E 2-3	08°09' S	80 W
21-6-95	ata	0	E 5	E 0.5-1	08°09' S	90 W
21-6-95	ahiahi	0.5	0	E 0.5	08°20' S	96 W
22-6-95	ata	0	0	SE 0.5	08°24' S	92 W
22-6-95	ahiahi	3	SSW 0-6	S, SE 0.5	08°30' S	60 W
23-6-95	ata	4.5	SE 5-10+	SE 0.5-1	08°22' S	19 W
23-6-95	ahiahi	5	E, SE 8-10	SSE 0.5-1	09°07' S	30 W
24-6-95	ata	5	E 10-15	SE 1	10°02' S	39 W
24-6-95	ahiahi	5	E 10-15	SE 1-2	11°04' S	5 W
25-6-95	ata	5	E 10-15	SE 1	12°06' S	7 E
25-6-95	ahiahi	5	E 10-15	SE 1-2	13°12' S	8 E
26-6-95	ata	6	E 15+	E 1-2	14°24' S	17 E
26-6-95	ahiahi	5	E 10	S, E, SE 1	15°42' S	26 W
27-6-95	ata	4.5	ESE 10	ESE 0.5	16°47' S	14 E
27-6-95	ahiahi	5	SE 10	SE 1	17°27' S	2 W
28-6-95	ata	5.5	E 10-12	ESE 1-2	18°26' S	7 W
28-6-95	ahiahi	4.5	ESE 8-10	S, E, NE 1-2	19°24' S	5 W
29-6-95	ata	6	E 15-20	E, SE, NE, 1-2	19°55' S	158°49' W
29-6-95	ahiahi				21°03' S	159°26' W

Rārangi 12: Tā te Kaiwhakatere Wāhi Rere

Ngā Puna Kōrero

Ngā Kaikorero

Barclay-Kerr, Hoturoa	(1990-1996)
Berisch, Martin	(1994-1995)
Busby, Hector Maurice	(1995)
Conrad, Stanley	(1994-1995)
Evans, Piripi	(1994-1995)
Gabel, Robert	(1995)
Kereopa, Turakuraku (Lux)	(1994-1995)
Lewis, David	(1995)
Omai, Ke Ahi	(1995)
Puhihi, Hekenukumai	(1994-1996)
Puhihi, Hilda	(1994-1995)
Sewralur, Sesario	(1995)
Thatcher, J (Jacko)	(1994-1996)
Whakataka-Brightwell Matahi	(1995)
Wilson, Charlie	(1994-1995)

Ngā Pumanawa Rorohiko

Biggs, B (1995) *Protopolynesian Lexical Word Index (POLLEX)*. Kōnae Pūmanawa. Tari Māori. Auckland University.

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