

# Urim-Kukwo Orthography and Phonology Description

*The Kukwo (Kalpm) dialect of the Urim language (URI)*

## *Sandaun Province*

**Torricelli Phylum; Stock level isolate** (Laycock 1973)

Population census: 700 (2000 census)

Major villages: Nangken, Womgerer

Linguistic work done by: SIL

Data checked by: Seija Meinander, Joyce Wood 2005-2014

The Urim language is partially in the East Sepik Province (Yangkolen dialect), and partially in Sandaun Province (Kukwo dialect). This OPD describes phonological observations and the orthography in the Kukwo (or Kalpm) dialect, Sandaun Province.

## Phonemic and Orthographic Inventory

/	a	e	h	i	k	<sup>k</sup> ŋ	l	m	n	ŋ	o	p	<sup>p</sup> m	r	s	t	<sup>t</sup> n	u	w	j	/
<	a	e	h	i	k	kg	l	m	n	ng	o	p	pm	r	s,j	t	tn	u	w	y	>
<	A	E	H	I	K		L	M	N	Ng	O	P		R	S,J	T		U	W	Y	>

## Consonants

	Bilab	LabDen	Dental	Alveo	Postalv	Retro	Palatal	Velar	Uvular	Pharyn	Glottal
Plosive	p			t				k			
Nasal	m			n				ŋ			
Trill				r							
Fricative				s							h
Approx							j				
Lateral Approx				l							

/w/                 voiced labio-velar approximant

/<sup>p</sup>m/            prestopped bilabial nasal

/<sup>t</sup>n/            prestopped alveolar nasal

/<sup>k</sup>ŋ/            prestopped velar nasal

Consonant Environments:

word-initial

word-final

intervocalic

preconsonantal across syllable boundaries

postconsonantal across syllable boundaries

syllabic consonant

C	[ <sup>1</sup> fo.nɛ.tik]	/phonemic/	<Orthographic>	'GLOSS'
p	[ <sup>1</sup> po:r]	/por/	<por>	'story'
	[ <sup>1</sup> wap]	/wap/	<wap>	'tree sp.' TP 'ton'
	[ji. <sup>1</sup> po]	/jipo/	<yipo>	'to tie'
	[təp.mə. <sup>1</sup> nɪŋ]	/tipminɪŋ/	<tpmning>	'mountain'
	[tal. <sup>1</sup> puk]	/talpuk/	<talpuk>	'branch'
	-			

<sup>1</sup> m	-			
	[ku:p <sup>1</sup> m]	/ku <sup>1</sup> p <sup>1</sup> m/	<kupm>	'1sg'
	[al.kup. <sup>1</sup> mən]	/alku <sup>1</sup> p <sup>1</sup> men/	<alkupmen>	'1sg.GEN'
	[ki:p <sup>1</sup> m. <sup>1</sup> tən]	/ki <sup>1</sup> p <sup>1</sup> mten/	<kipmten>	'2 paucal'
	-			
	-			

m	[ma:]	/ma/	<ma>	'milk, breast'
	[na:m]	/nam/	<nam>	'to bite'
	[ma. <sup>1</sup> mei]	/mamei/	<mamei>	'grandfather'
	[am. <sup>1</sup> pur]	/amur/	<ampur>	'don't'
	[hɛl. <sup>1</sup> mɛŋ]	/helmeŋ/	<hlmeng>	'broom'
	[hm.pei]	/hmpei/	<hmpei>	'rope'

w	[wan]	/wan/	< wan >	‘house’
	-			
	[yi.'wa]	/yiwa/	< yiwa >	‘grease’
	-			
	[ak.'weg.ŋel]	/akwe <sup>k</sup> ŋel/	< akwekgel >	‘to be ignorant’
	-			
t	[tu:k]	/tuk/	< tuk >	‘stick’
	[jat]	/yat/	< yat >	‘also, too’
	[mu.'tuk]	/mutuk/	< mutuk >	‘short’
	[wut.'nan]	/wutnan/	< wutnan >	‘be surprised’
	[n.'dəgn̩]	/nte <sup>k</sup> ŋ/	< ntekg >	‘to do, to make’
	-			
n̩	-			
	[ɑ:tŋ̩]	/ɑ'n/	< atn >	‘to stand’
	[al.kit.'ŋen]	/alki'nen/	< alkitnen >	‘2sg.GEN’
	[witŋ̩.'wetŋ̩]	/wi'n-wei'n/	< witnweitn >	‘four’
	-			
	-			
n	[nim]	/nim/	< nim >	‘slit drum’
	[ma:n]	/ma:n/	< man >	‘mother’
	[wa.'nukŋ̩]	/wanu <sup>k</sup> ŋ/	< wanukg >	‘greens’
	[wan.'dəŋ̩]	/wantenŋ/	< wanteng >	‘bamboo’
	[takŋ̩.ni]	/ta <sup>k</sup> ŋni/	< takgni >	‘sun’
	[n.'dam]	/ntam/	< ntam >	‘to cook’

r	[ro:]	/ro/	< ro >	‘to split’
	[wor]	/wor/	< wor >	‘good’
	[ka.'rom]	/karom/	< karom >	‘widower’
	[kar.'pign̩]	/karpi <sup>k</sup> ŋ/	< karpikg >	‘widow’
	-			
	[r.'kol]	/rkol/	< rkol >	‘to pull’
s	[ser:]	/ser/	< ser >	‘to weed’
	[writʃ]	/wris/	< wrij >	‘one’
	[wa.'sok]	/wasok/	< wasok >	‘small’
	-			
	[hj.՝dʒam]	/hinsam/	< hnjam >	‘sweat’
	-			
l	[la:n]	/lan/	< lan >	‘to boil’
	[u:l]	/ul/	< ul >	‘snake’
	[ka.'luk]	/kaluk/	< kaluk >	‘to wash (a child)’
	[tal.'pul]	/talpul/	< talpul >	‘to peel’
	-			
	[mlg.'ŋil]	/mlk <sup>k</sup> ŋil/	< mlkgil >	‘snake sp’
k	[ka:]	/ka/	< ka >	‘to light a fire’
	[tuk]	/tuk/	< tuk >	‘stick’
	['wna:.kul]	/wnakul/	< wnakul >	‘young woman’
	[ak.'lei]	/aklei/	< aklei >	‘every’
	[kar.'kuk]	/karkuk/	< karkuk >	‘to take a bath’
	-			

<sup>k</sup> ŋ	-			
	[wakŋ]	/wakŋ/	< wakg >	'fire'
	[tuk. <sup>k</sup> ŋun]	/tuk <sup>k</sup> ŋun/	< tukgun >	'ripe'
	[ <sup>t</sup> akŋ <sup>o</sup> .ni]	/ta <sup>k</sup> ŋni/	< takgni >	'sun'
	-			
	-			
ŋ	-			
	[wanŋ]	/wanŋ/	< wang >	'time'
	[naŋ. <sup>l</sup> il]	/naŋil/	< nangil >	'mosquito'
	[kiŋ. <sup>k</sup> im]	/kiŋkim/	< kingkim >	'to sweep'
	-			
	[ŋ. <sup>l</sup> ko]	/ŋko/	< ngko >	'to fall'
h	[ha:]	/ha/	< ha >	'village'
	-			
	[mə. <sup>h</sup> en]	/mehen/	< mehen >	'slowly'
	-			
	[kirk. <sup>h</sup> ap]	/kirk-hap/	< kirkhap >	'grave'
	[h. <sup>h</sup> mit]	/hmit/	< hmit >	'ignorant, stupid'
j	[ja:]	/ja/	< ya >	'road'
	-			
	[ma. <sup>h</sup> en]	/majen/	< mayen >	'old woman'
	-			
	[hik. <sup>h</sup> om]	/hikyom/	< hikyom >	'thorn'
	-			

## Vowels

i	u
e	o
	a

Environments:

- word-initial
- word-final
- inter-consonantal
- prevocalic across syllable boundaries
- postvocalic across syllable boundaries

i	[i:kŋ]	/i <sup>k</sup> ŋ/	< ikg >	‘eye’
	[hi:]	/hi/	< hi >	‘sore’
	[lim]	/lim/	< lim >	‘nose’
	[ti.'jɛl]	/ti-el/	< tiel >	‘part’
	[wa.'il]	/wail/	< wail >	‘big’
e	[ɛ:k]	/ek/	< ek >	‘mouth’
	[kwe:]	/kwe/	< kwe >	‘to call’
	[wel]	/wel/	< wel >	‘bird’
	[he.ut]	/heut/	< heut >	‘to tie’
	[ti.'jɛl]	/ti-el/	< tiel >	‘part’
u	[u:r]	/ur/	< ur >	‘indef.pron.’
	[hu:]	/hu/	< hu >	‘water’
	[num]	/num/	< num >	‘body’
	[hu.'wan]	/huan/	< huwan > ?	‘to shake off’
	[ma.'u:r]	/maur/	< maur >	‘spirit’

o	[om]	/om/	< om >	‘now’
	[mo:]	/mo/	< mo >	‘to die’
	[po:r]	/por/	< por >	‘story’
	[kro.ˈwitʃ]]	/krois/	< kroij > ?	‘sour’
	-			
a	[ak]	/ak/	< ak >	‘to do’
	[ma:]	/ma/	< ma >	‘milk’
	[ma:n]	/ma:n/	< man >	‘mother’
	[na.ˈurk]	/naurk/	< naurk >	‘wild mango’
	[nu.ˈwar]	/nuar/	< nuwar > ?	‘to decorate something’

### Discussion of vowel sequences:

Vi sequences are syllabified as diphthongs (see below); however, [wa.ˈil] ‘big’ is an exception.

iV sequences are syllabified into two separate syllables, although single morpheme examples cannot be found: [ti.ˈjel] ‘part’, ['ti.ur] ‘some (people)’ are both built from the demonstrative [ti] ‘here’.

Vu sequences result in two syllables.

[ha.ˈur]	/haur/	< haur >	‘to cover’
[ma.ˈur]	/maur/	< maur >	‘spirit’
[na.ˈurk]	/naurk/	< naurk >	‘wild mango’
[wra.ˈur]	/wraur/	< wraur >	‘three’

uV sequences result in two syllables as well.

[hu.ˈwan]	/huan/	‘to shake off’
[nu.ˈwar]	/nuar/	‘to decorate’
[u.ˈwen]	/u-en/	‘to bury’
[tu.ˈwekŋ]	/tuwe <sup>k</sup> ŋ/	‘3du’

The sequence /ui/ is only observed in CVC syllables and preceding /n/ or /n/.

## Diphthongs

/ei/                  /ui/                  /oi/                  /ai/

Environments:

- word-initial
- word-final
- inter-consonantal
- preconsonantal across syllable boundaries

ei	[ei]	/ei/	< ei >	‘yes’
	[hm̥.ˈpei]	/hmpei/	< hmpei >	‘vine, rope’
	[weɪf̩]	/weis/	< weij >	‘stone’
	[kei.ˈmuŋ]	/keimun/	< keimung >	‘coconut shell’
ui	-			
	-			
	[kuŋ]	/kuin/	< kuin >	‘middle’
	[ˈku.na]	/kuina/	< kuina >	‘what’
oi	[oi]	/oi/	< oi >	(interjection)
	[woi]	/woi/	< woi >	(interjection)
	[hroitʃ]	/hrois/	< hroij >	‘blocked’
	-			
ai	[ai]	/ai/	< ai >	‘over there’
	[kai]	/kai/	< kai >	‘to go’
	[klɑŋ]	/klain/	< klain >	‘bits & pieces’
	[ka.ˈno]	/kaino/	< kaino >	‘go up’

## Suprasegmentals (tone, stress, length)

Urim does not have tone.

As in the main dialect, vowel length is contrastive for the vowel /a/, in one-syllable words.

a	[man]	/man/	< man >	'other'
	[naŋ]	/naŋ/	< nang >	'name'
	[waŋ]	/waŋ/	< wang >	'time'
a:	[ma:n]	/maan/	< man >	'mother'
	[na:ŋ]	/naaŋ/	< nang >	'ridge'
	[wa:ŋ]	/waanŋ/	< wang >	'tree trunk'

Length is not contrastive for other vowels; minimal pairs have not been found. Lengthened vowels, as marked in the phonetic transcriptions, occur only within stressed syllables.

Stress in Urim is primarily on the ultimate syllable, especially in verbs. The phonetic components of word stress in Urim are length and intensity. Pitch functions at the clause level, but not at the word level to affect stress (Luoma n.d.)

In some bisyllabic nouns, the open vowel /a/ conditions an exception, such that stress is on the first syllable (Hemmila & Luoma n.d.:10). For example:

['takŋ̩.ni]	/ta <sup>k</sup> ŋni/	< takgni >	'sun'
['wna.kul]	/wnakul/	< wnakul >	'young woman'
['hla.niŋ]	/hlaninj/	< hlaning >	'peanut'
['tra.puk]	/trapuk/	< trapuk >	'fly'

Three-syllable words have ultimate syllable stress.

Verbs: [kom.ki.'ti] 'follow', [ɛk.la.'la] 'talk'

Adjectives: [wa.ti.'net] 'long, tall', [wa.rim.'pet] 'pregnant', [yi.wa.'wits] 'greasy'

Nouns: [ha.ka.'likŋ̩] 'little finger', [kin.kəp.'man] 'women-men', [nuŋ.ku.'tikŋ̩] 'afternoon'

Four-syllable words are rare, but here are two examples:

[ak.,ikŋ.wam.'pel]	'do-eye-hand-CAUS'	'to steal'
[,ak.won.alm.'pen]	'do-heart-shoot-TR'	'to think'

## Syllable Patterns

		word-initial	after V	after C	word-final
V	[a]	[u.'wen]	-	-	
	/a/	/u-en/			
	<a>	<uwen>			
	'GEN'	'to bury'			
VC	[al]	[am.'pur]	[wa.'il]	[naŋ.'il]	[wra.'ur]
	/al/	/amur/	/wail/	/naŋil/	/wraur/
	<al>	<ampur>	<wail>	<nangil>	<wraur>
	'to eat'	'don't'	'big'	'mosquito'	'three'
VCC	[eln]	[arp.'men]	[na.'urk]	[ak.alm.'pe]	
	/eln/	/ar <sup>p</sup> m-en/	/naurk/	/ak-alm-e/	
	<eln>	<arpmen>	<naurk>	<akalmpe>	
	'to put'	'wait'	'wild mango'	'to answer'	
CV	[la]	['kei.mun]	[ma.hi]	[kil.pə.'hatn]	[mo.'ho]
	/la/	/keimun/	/mahi/	/kilpaha'n/	/moho/
	<la>	<keimung>	<mahi>	<kilpahatn>	<moho>
	'to speak'	'coconut shell'	'hold baby'	'sago leaf stalk'	'pig trail'
CVC	[man]	[wan.'deŋ]	[ma.'hin]	[kalp.'mel]	[hm.pik.'ŋan]
	/man/	/wanten/	/mahin/	/kalp'm-el/	/hmpi <sup>k</sup> ŋan/
	<man>	<wanteng>	<mahin>	<kalpmel>	<hmpkgan>
	'other'	'rattan'	'raw'	'empty'	'cooked sago'
CVCC	[melp]	[walm.popm]	[nu.'hurn]	[nuŋ.kulk.'ŋet]	[nikŋ.'walpm]
	/melp/	/walmpopm/	/nuhurn/	/nuŋkul <sup>k</sup> ŋet/	/ni <sup>k</sup> ŋ-walpm/
	<melp>	<walmpopm>	<nuhurn>	<nungkulget>	<nikgwalpm>
	'bee'	'blood'	'leave s.o.'	'stubborn'	'stomach-liver'
CCV	[kli]	['hla.ning]	[ku.'kwa]	[hn.'tra]	[tm.'plo]
	/kli/	/hlaning/	/kukwa/	/hntra/	/timplo/
	<kli>	<hlaning>	<kukwa>	<hntra>	<timplo>
	'to close'	'peanut'	'open	'make (body part)	'wing'
CCVC			(a door)'	'straight'	
	[kronj]	[wronj.wai.'let]	[yo.'tlak]	[huŋ.'wratn]	[nam.'preŋ]
	/kronj/	/wronj-wailet/	/yotlak/	/huŋwratn/	/nampreŋ/
	<krong>	<wrongwailet>	<yotlak>	<hungwratn>	<nampreng>
CCVCC					
	'neck'	'crowd, many'	'banana sp.'	'bow'	'distribute'
	[plaln]	[plaln.'ten]	-	-	
	/plaln/	/plaln-ten/			
	<plaln>	<plalnten>			
	'finish'	'everyone'			

Note: <nangil> is the only example found of a VC syllable following a syllable-final consonant. Also, VCC following a consonant in <akalmpe> follows a word-initial VC syllable.

### **Conventions: Phonological**

Unlike in the Yangkolen dialect, the status of the phoneme /h/ is clear in the Kukwo dialect of the Urim language.

The plosives [p t k] tend to be pronounced voiced [b d g] word medially, especially after nasals: [n'deŋŋ] <ntekg> 'make'.

The pre-stopped nasals /p̚m/, /t̚n/, /k̚ŋ/ are voiceless in isolation, but are often voiced when followed by a vowel in the following syllable or word.

At syllable boundaries (including word boundaries), after a nasal (but not a pre-stopped nasal) and before a vowel or the sonorant consonants /w, r, j, h/, a homorganic voiceless stop is inserted. It then becomes the onset of the following syllable, or forms a complex onset cluster of the following syllable.

[eln#arp̚m] → [eln.tarp̚m]	(voiceless alveolar stop inserted after an alveolar nasal.)
[alm-en] → [alm.pen]	(voiceless bilabial stop inserted after a bilabial nasal.)

The close front vowel /e/ is often phonetically open-mid [ɛ] in closed syllables.

The alveolar nasal and prestopped nasal tend to become palatalized after /i/: [kjŋ] <kin> 'woman', [wit'nim] <witnim> 'greens sp'. The rule does not apply if the syllable starts with an alveolar /n/ or /t/: [wa'di:n] <watin> 'long, tall'.

When the glides /ai ei oi ui/ are followed by the alveolar nasal /n/ or the prestopped alveolar nasal /t̚n/, the offglide is realized as palatalisation on the nasal: [aqŋ̚ eŋ̚ oŋ̚ uŋ̚]. For example: [ku:ŋ̚] <kuin> 'middle', [kaŋ̚nil] <kainil> 'moon', [wreŋ̚ŋ̚] <reitn> 'get up'.

Luoma (1996) explains that the phoneme /s/ derives from a diachronic process of palatalisation. The vowel /i/ or an /i/-final diphthong conditions palatalisation of the alveolar consonants which follow it. If that consonant was a /t/, it was realised as an [s] instead of a [t]. If it was an /n/, palatalisation progressed through to a following /t/ to form [s]. In the Kukwo dialect, /s/ is palatalised further: In word-medial and word-final environments, when preceded by /i/, /s/ surfaces as an affricate [ts̚] or [tʃ̚], or sometimes a palatalised alveolar stop [t̚j̚], or even a palatal plosive [c̚].

[weitʃ̚]	/weis/	< weij >	'stone'
[hŋ̚.t̚dʒ̚am]	/hinsam/	< hnjam >	'sweat'

In the following example, there is no vowel [i] to condition the palatalisation of /s/ into an affricate.

[wa.'sok]	/wasok/	< wasok >	'small'
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## Conventions: Orthographic

The phoneme /h/ is written in the Kukwo dialect, whereas in the Yangkolen dialect it is of questionable phonemic status and is not written.

The pre-stopped nasals /<sup>p</sup>m/, /<sup>t</sup>n/, /<sup>k</sup>ŋ/ are written <pm>, <tn>, and <kg> respectively, as in the Yangkolen dialect orthography.

As noted above, sometimes (but never word-initially) /s/ is palatalised to an affricate sound. In the Kukwo dialect, it is written with the grapheme <j>. The only word-initial instances of <j> are in loan words.

Long vowels are written with a single vowel grapheme. There are only a few examples of contrast in vowel length, which can be easily distinguished from context.

Syllable stress is often on the final syllable of the word. In unstressed syllables, the vowel is often reduced to [ə] or [i]. In such cases, the Kukwo people choose to not write a vowel at all.

[təp.mə.'niŋ]	/tipminiŋ/	<tpmning>	‘mountain’
[nɪ.'mon̩]	/nimon̩/	<nmong>	‘black palm’
[mɪ.'tark]	/mitark/	<mtark>	‘mouth harp’

Or, to write the syllabic consonant with no vowel.

[tŋ.'klak]	/tŋklak/	<tngklak>	‘dry’
[mn̩.'tipm̩]	/minti <sup>p</sup> m/	<mntipm>	‘tulip greens’
[r.'kol]	/rkol/	<rkol>	‘to pull’
[lŋ.'kep]	/lŋkep/	<lŋkep>	‘forehead’

If the unstressed syllable (is word-initial and) begins with a vowel, the convention is to represent the reduced vowel with the grapheme <i>, as in the Yangkolen dialect.

[əp.'ma]	/V <sup>p</sup> ma/	<ipma>	‘stomach’
[ət.'na]	/V <sup>t</sup> na/	<itna>	‘be on’

### **Sample Text: *Abais alm wel – Abais shoots a bird.***

Phonetic transcription:

kupmakal lagədi abais kil kano akal ak wakŋ̊ ari wel. kil əla kerobin ari kerobin hret a tuwe:gŋ̊ kano. om greis la tolpa, pa ti kupmal ε:iŋ̊ kano. om abais la tolpa, aje pa ti kitŋ̊ kul egn̊ mende:gŋ̊ kano. om tuwe:gŋ̊ kano ak wakŋ̊, ari wel kano hagiar. Tuwe:gŋ̊ kano ari kil ak wakŋ̊ pa, ari ari wel pa hokŋ̊a. Wel pa warpm̊ marmar, hətnok, wel kor naŋ̊ a kil pa. om abais nowen. abais no jo pa kano kano a alm ak waia. kil alm ma:n pa mo, wi warim, wi warim pa nampon. om je nar. je nar om tuwe:kŋ̊ greis je nar wan. je nar eln wel pa ha, pa men arpm̊ ari, dʒois kinar. dʒois kinar ario. om kupm̊ wi wel pa plan dʒois. kupm̊ wi wel pa plantel. wel pa terbijet hel kai timplo wompel hel kai wompel, terbijet hel mədeŋ̊. plantel plalnt om yan kerobin lap. kil əlap əndam həlo om wi, om məndo wailet ak al həmpəgŋ̊an. apm pake, om men hokŋ̊ om.

Orthographic representation:

Kupm akal la kiti Abais kil kaino akal ak wakg ari wel. Kil la Kerobin ari Kerobin hret a tuwekg kaino. Om Grace la tolpa, pa ti kupm al ekg kaino. Om Abais la tolpa, aye pa ti kitn kul ekg mentekg kaino. Om tuwekg kaino ak wakg, ari wel kaino Hakiar. Tuwekg kaino ari kil ak wakg pa, ari ari wel pa hokga. Wel pa arpm marmar, htnok, wel kor – nang a kil pa. Om Abais nowen. Abais no yo pa kaino kaino... alm ak waia. Kil alm man pa mo, wi warim, wi warim pa nampon. Om ye nar. Ye nar om tuwekg Grace ye nar wan. Ye nar eln wel pa ha, pa men arpm ari, Joyce kinar. Joyce kinar ario. Om kupm wi wel pa plan Joyce. Kupm wi wel pa plantel. Wel pa terpinet hel kai timplo wompel hel kai wompel, terpinet hel mteng. Plantel plalnt om yan Kerobin lap. Kil lap, ntam, hlo om wi, om mento wailet ak al hmpkgan. Apm pa ke, om men hokg om.

English translation:

I want to tell about when Abais went up by torch to look for a bird. He asked Kerobin but Kerobin didn't want to go up with him. Then Grace said, How about if I go up with you? And Abais said, OK, you come and we two will go up. So they (two) went up with a torch, to look for a bird up at Hagiar. They (two) went up to look, he used the torch, and they saw some birds sleeping. The birds were sitting on top of a termite nest in a marmar tree – they were kingfishers. Then Abais climbed the tree. He climbed up the tree, up, up, and pierced the bird with a wire. He killed the mother bird, and took the baby bird too. Then they carried them down. He and Grace carried them down to the house. They put the birds down in the house, and we were sitting there, however, Joyce came down. She came down to see us. So I took the bird and showed Joyce. I showed the bird to her. It had blue on one wing and blue on the other, and blue on its breast. After I showed it to her, father burned the feathers off. He removed the feathers, cooked it, it was done. Then he took it out of the saucepan, and we all ate sago with the bird meat. The end, then we went to sleep.

## Orthography Chart

Phonemes	Kukwo dialect	Yangkolen dialect	Kombio orthography	Tok Pisin
/a/	<A,a>	<A, a>	<A, a>	<A,a> <B, b> <D, d>
/e/	<E, e>	<E, e>	<E, e>	<E, e> <G, g>
/h/	<H, h>	-	-	-
/i/	<I, i>	<I, i>	<I, i>	<I, i>
/k/	<K, k>	<K, k>	<K, k>	<K, k>
/kŋ/	<kg>	<kg>	<Kn, kn>	-
/l/	<L, l>	<L, l>	<L, l>	<L, l>
/m/	<M, m>	<M, m>	<M, m>	<M, m>
/n/	<N, n>	<N, n>	<N, n>	<N, n>
/ŋ/	<Ng, ng>	<ng>	<Nk, nk>	<ng>
/o/	<O, o>	<O, o>	<O, o>	<O, o>
/p/	<P, p>	<P, p>	<P, p>	<P, p>
/pm/	<pm>	<pm>	<Pm, pm>	-
/r/	<R, r>	<R, r>	<R, r>	<R, r>
/s/	<S, s>	<S, s>	<S, s>	<S, s>
	<J, j>			
/t/	<T, t>	<T, t>	<T, t>	<T, t>
/tn/	<tn>	<tn>	<Tn, tn>	-
/u/	<U, u>	<U, u>	<U, u>	<U, u>
/w/	<W, w>	<W, w>	<W, w>	<W, w>, <V, v>
/j/	<Y, y>	<Y, y>	<Y, y>	<Y, y>

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