

Universal Multiple-Octet Coded Character Set
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Title: Proposal to encode the Pahawh Hmong script in the UCS

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1.0 Introduction. Pahawh Hmong is a script devised for writing the Hmong language by Shong Lue Yang (*Soob Lwj Yaj* ຄຳ ຫຼື ຫຼື ຫຼື [ʃóŋ lɛ̌ jâ]). Shong Lue Yang was a charismatic figure among the Hmong in Laos, and was considered by many to be a kind of messiah. It is said that in 1959 the writing system was revealed to him by two supernatural messengers who appeared to him over a period of months. A full account of this is given in Smalley, Vang, and Yang 1990. Devised in Laos, Pahawh Hmong was taken to northern Thailand refugee camps, and then moved with waves of immigrants to Minnesota and California in the United States, and to Australia. The writing system itself had four Stages of development. In this document, the Romanized Popular Alphabet orthography (widely used by the Hmong in North America) is given alongside example text in Pahawh Hmong. Two features of the RPA are of note. Double vowels *ee* and *oo* indicate [ɛŋ] and [oŋ] respectively; final letters indicate tones thus:

RPA		
-b	┌	Ꞩ high-level
-m	└	ꞩ low-glottalized
-d	┘	Ɦ low-rising
-j	┙	Ɜ high-falling
-v	┚	Ɡ mid-rising,
-Ø	┛	Ɬ mid-level
-s	├	Ɪ low-level
-g	┝	ꞯ falling-breathy

1.1 The Source Version, Pahawh Pa (*Phajhauj Paj* ຫຼື ຫຼື ຫຼື [p^hâ hâu pâ]), is not in current use. While containing the seeds of the system, in its structure and glyphs it is very different from the later Stage Versions, and was never used as a practical system for writing Hmong. It is considered a separate but related script, and is not supported by this encoding.

1.2 The Second Stage Reduced Version, Pahawh Njia Dua O (*Phajhauj Ntsiab Duas Ob* ຫຼື ຫຼື ຫຼື [p^hâ hâu ndzɿ́a dùa ʔó]), is in current use. It was taught by Shong Lue Yang in 1965-04, and is supported by the Australian Hmong Language Institute and by Hmong Script Software's ຫຼື ຫຼື ຫຼື *Cwjmem* [tɕ mɛ̌] font; fonts are also available from the Hmong Language Institute in Minnesota. The Hmong user community in Australia uses the Second Stage Reduced Version.

1.3 The Third Stage Reduced Version, Pahawh Njia Dua Pe (*Phajhauj Ntsiab Duas Peb* ຫຼື ຫຼື ຫຼື [p^hâ hâu ndzɿ́a dùa pé]), is in current use. It rationalizes some features of the Second Stage Reduced Version, and was introduced by Shong Lue Yang in 1970-08. Some members of the Hmong user

community in Minnesota use the Third Stage Reduced Version. A Third Stage font is available from Hmongwriting.com.

1.4 The Final Version, Pahawh Tsa (*Phajhauj Txha* ້ᐃᐅ ᐃᐅ ᐃᐅ [p^hâ hâu ts^ha]), is not in regular use. It is a radical simplification of the Third Stage Reduced Version introduced in January 1971 by Shong Lue Yang about a month before his assassination. Smalley *et al.* 1990 state that it is not in use as a practical system, though some people who know it use it as a kind of shorthand (and called it “shorthand” in English). The encoding proposed here can represent text written in all three of these Revisions.

The fact that Stage Two and Stage Three orthographies are both used makes character naming and placement of characters in the code table slightly problematic. In the Third Stage Reduced Version, base characters without diacritics end in *-b* or *-v* tones; these are represented by a more complex alternation of tones (*-b, -v, -Ø, -g, -m*) in the Second Stage Reduced Version; The easier Third Stage Reduced Version names have been used here—this does not imply a preference for either Stage, as UCS names are arbitrary. The code charts here follow the Second Stage Reduced Version ordering because we have access to a complete dictionary which follows that order.

2.0 Processing. Pahawh Hmong syllables are separated by spaces in text, and may contain one to four characters: base, base with diacritic, base + base, base with diacritic + base, base + base with diacritic, and base with diacritic + base with diacritic. Structurally, Pahawh Hmong is unique among the world’s writing systems in that the vowel rime of a syllable (its vowel with or without tone diacritic) is written before the consonant onset of the syllable (its consonant with or without consonant-identifier diacritic). In the Figures 1 and 2, the structure of the words “Pahawh Hmong” (*Phajhauj Hmoob* [p^hâ hâu ^hmóŋ]) is analyzed, given in Second and Third Stage Reduced Version (Final Version is identical to Third Stage Reduced Version in this example).

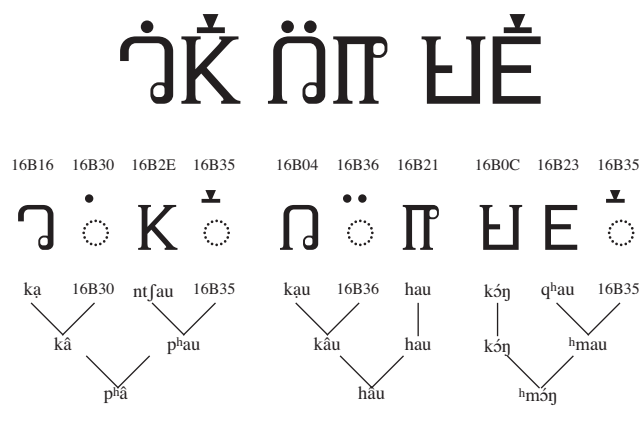


Figure 1. Second Stage Reduced Version

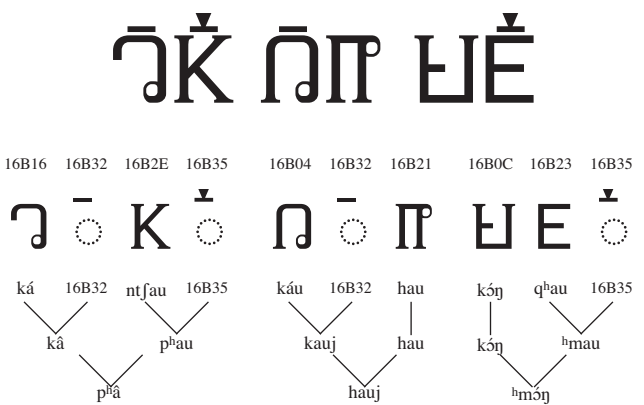


Figure 2. Third Stage Reduced Version and Final Version

2.1 Vowel rimes. Characters from 16B00–16B1B are vowel codas. Adding diacritics to these alters the tone. 16B1A–16B1B are long vowels. In Shong Lue Yang’s system, Hmong Daw dialect syllables KIAB 𐌆, KIAV 𐌇, KAB 𐌈, and KAV 𐌉 are used for Hmong Leng dialect *kav*, *kav*, *kaab* or *kaav* respectively. A revision of the script by Jay Kue of Hmong Script Software includes special characters for *kaab* 𐌊 and *kaav* 𐌋 (in Second Stage Reduced Version *kaam* and *kaav*). These are atomic characters with no decomposition. In the first place, decomposition would break the one-to-four character convention for representing Hmong syllables. In the second, the addition of a (non-productive) character I would be problematic as 16B4A PAHAWH HMONG NUMBER TENS looks just like it.

2.2 Consonant onsets. Characters from 16B1C–16B2F are consonant heads. Adding diacritics to these changes the base consonant to a different, usually unrelated, consonant. Use of diacritics to affect various changes is unsystematic for the consonants. For the vowels, Stage Two Reduced Version, Stage Three Reduced Version, and Final Stage Pahawh Hmong offer an increasing rationalization of relationships, which in Final Stage Pahawh Hmong is quite systematic. The differences are orthographic, however, and do not affect the encoding. As stated above, the Stage Three Reduced Version was chosen as the basis for the character names in the encoding because it is more systematic than the Stage Two Reduced Version, and because the Final Stage is a subset of the Stage Three Reduced Version.

2.3 Combining diacritics are found at 16B30–16B36 and function in the usual way. Note that 16B34 and 16B35 could be composed (16B32 + 16B30 and 16B32 + 16B31 respectively). This encoding is not recommended (because decomposition would break the one-to-four character convention for representing Hmong syllables) but a canonical decomposition is given in the character properties. See Figure 3 for discussion of grounds for encoding these as script-specific characters.

2.4 Encoding order. Visual-order encoding should be preferred for Pahawh Hmong because it will make implementation less expensive and it is what users expect. The logical “reversal” of coda and head from the pronounced syllable does not affect the sorting algorithm, which follows visual order as well. Inputting and display are also done according to visual order. Unlike Devanagari, where a few vowel signs appear before the base consonant but should be represented phonetically in the backing store, *all* Pahawh Hmong syllables are uniformly represented as V^tC even though the pronunciation is CV^t. All current implementations employ this method of encoding.

3.0 Non-alphabetic characters are used in Pahawh Hmong.

3.1.0 Punctuation marks are found at 16B37–16B3C. Additional punctuation marks like ? () . , ; : < > – — are used in Pahawh Hmong and have been unified with existing UCS characters.

3.1.1 Exclamation mark 16B38 𐌌 was invented by Pa Kao Her (*Paj Kaub Hawj* 𐌆𐌇𐌈𐌉 [pâ káu hâw]) in 1985; Smalley and the Naadaa font retain a special glyph for this but the Cwjmem font either does not include it or prefers the generic exclamation mark. Shong Lue Yang also used “!”.

3.1.2 Intonation mark 16B39 ∴ indicates the sung or chanted nature of the text. It was also used by some Second Stage Reduced Version users to mark the *-d* tone.

3.1.3 Reduplication mark 16B3A 𐌍 indicates reduplication of the syllable preceding: 𐌍𐌆𐌇 = 𐌆𐌇 𐌆𐌇. *tsuag tsuag* [tʃu̯a tʃu̯a] ‘hurry hurry’.

3.1.4 Ampersand 16B3B 𐌎 is derived from the ampersand and was also invented by Pa Kao Her. Smalley’s font and the Naadaa font have a special glyph for this but in the Cwjmem font it faces the same direction as the generic ampersand.

3.1.5 Percent sign 16B3C 7 is the percent sign. Smalley and the Naadaa font retain a special glyph for this but the Cwjmem font appears to modify the regular percent sign by having dots instead of rings.

3.2 Digits and numbers. 16B40–16B49 are the decimal digits 0–9. A nondecimal numeric system also exists, which makes use of 16B4A–16B50. It is not in current use. One complication is that some users employ 16B4A PAHAWH HMONG NUMBER TENS as a *zero*.

3.3 Grammatical classifier. 16B51 𐄂 represents the syllable *lub* 𐄂𐄃 [lú], the most common grammatical classifier in the Hmong language. Smalley *et al.* 1990 give the example 𐄂 𐄃𐄄 *lub npe* [lú mbe] ‘a name’. Shong Lue Yang created a sign for this because of the high frequency of the word in the language, and considering the similarity of the two characters used to write it it seem that in devising the character Shong Lue Yang was being very practical indeed.

3.4 Logographs. 16B52–16B56 are logographs naming periods of time: *xyoo* ‘year’ 𐄅, *hli* ‘month’ 𐄆, *zwj thaj* ‘date’ 𐄇, *hnub* ‘day’ 𐄈, *ntuj* ‘season’ 𐄉 respectively.

3.5 Arithmetic operators. 16B57–16B5A are arithmetic operators. Smalley *et al.* 1990 give them, but they are not found in the fonts available from the Australian and Cwjmem communities.

3.6 Logographs for clan names. 16B60–16B71 are logographs for clan names. 16B60–16B6D were devised by Shong Lue Yang, and 16B6E–16B71 were added by Chia Koua Vang (*Txiaj Kuam Vaj* 𐄊𐄋 𐄌 𐄍 [tsâa kua vâ]).

According to Hmong custom, men and women from the same clan cannot marry each other, and are restricted in their behavior in each other’s presence. They are perceived to be like brothers and sisters so far as the appropriateness of sexual contact is concerned, with considerably more restrictions than exist in a sibling relationship in the West. For example, men and women of the same clan should not throw the ball to each other at the Hmong New Year, a custom potentially leading to courtship; neither should they spend time alone together....

Shong Lue Yang designed the clan logographs to be sewn into garments or worn as badges, or posted on desks or doors to identify a person’s clan. This would enable people to behave appropriately. Such identification was needed in the resettlement camps in Laos to which many Hmong people had fled for protection from the communists. In those surroundings they did not know all of their neighbors, much less other people they met.

It is also sometimes hard to identify a person’s clan even if you have heard the person’s name. Order of given name and clan name is not fixed. Somebody called *Vaj Yaj* 𐄎 𐄏 ‘Vang Yang’ might belong either to the *Vang* clan or the *Yang* clan, depending on which order is being used. Under conditions where strangers are regularly encountered, it is awkward to have to ask constantly what the other person’s clan is.... (Smalley *et al.* 1990:83–84)

These characters are not in current use, but are encoded for historical reasons.

4.0 Ordering. The ordering given in Lee Nao Long et al 2001, which uses the Second Stage Reduced Version orthography, follows the relative order of the tones, namely $-b < -m < -d < -j < -v < -\emptyset < -s < -g$ ($\acute{v} < \grave{v} < \check{v} < \hat{v} < \tilde{v} < \bar{v} < \breve{v}$). All stages use this tone-based ordering—where they differ is in which *characters* they use to represent the tones. This causes difficulties, in particular for a generic ordering based on the Second Stage Reduced Version.

In the presentation below, base characters are black, letters with CIM TUB are (using Web-named colours) **dark slate blue**, letters with CIM SO are **dark goldenrod**, letters with CIM KES are **dark orange**, letters with CIM KHAV are **dark green**, letters with CIM SUAM are **crimson**, letters with CIM HOM are **dark magenta**, and letters with CIM TAUM are **dark cyan**.

5.0 Character names. The chief problem in encoding Pahawh Hmong involves what to name the vowel rimes, because the values given to the base letters in the Second Stage Reduced Version and the Third Stage Reduced Version are not compatible. The table to the right here shows the problem: the expected order is the order of the tones (left to right then top to bottom), regardless of the shape of the glyphs. The black glyphs in the table here (without diacritics) should be the source names for the characters.

In the code chart below, the names used are Third Stage Reduced Version names based on the regular paradigm.

Second Stage Reduced Version vowel rimes:

Ṽ kėj	Ṽ kėj	Ṽ kėj	Ṽ kėj	Ṽ kėj	Ṽ kėj	Ṽ kėj	Ṽ kėj
Ḍ kí	Ḍ kí	Ḍ kí	Ḍ kí	Ḍ kí	Ḍ kí	Ḍ kí	Ḍ kí
Ṁ káu	Ṁ káu	Ṁ káu	Ṁ káu	Ṁ káu	Ṁ káu	Ṁ káu	Ṁ káu
Ṃ kú	Ṃ kú	Ṃ kú	Ṃ kú	Ṃ kú	Ṃ kú	Ṃ kú	Ṃ kú
Ṇ ké	Ṇ ké	Ṇ ké	Ṇ ké	Ṇ ké	Ṇ ké	Ṇ ké	Ṇ ké
Ḣ kái	Ḣ kái	Ḣ kái	Ḣ kái	Ḣ kái	Ḣ kái	Ḣ kái	Ḣ kái
Ḥ kój	Ḥ kój	Ḥ kój	Ḥ kój	Ḥ kój	Ḥ kój	Ḥ kój	Ḥ kój
Ḧ káw	Ḧ káw	Ḧ káw	Ḧ káw	Ḧ káw	Ḧ káw	Ḧ káw	Ḧ káw
Ṁ kúa	Ṁ kúa	Ṁ kúa	Ṁ kúa	Ṁ kúa	Ṁ kúa	Ṁ kúa	Ṁ kúa
Ṃ kó	Ṃ kó	Ṃ kó	Ṃ kó	Ṃ kó	Ṃ kó	Ṃ kó	Ṃ kó
Ṅ kía	Ṅ kía	Ṅ kía	Ṅ kía	Ṅ kía	Ṅ kía	Ṅ kía	Ṅ kía
Ṇ ká	Ṇ ká	Ṇ ká	Ṇ ká	Ṇ ká	Ṇ ká	Ṇ ká	Ṇ ká
Ḣ kw	Ḣ kw	Ḣ kw	Ḣ kw	Ḣ kw	Ḣ kw	Ḣ kw	Ḣ kw
Ḥ káa	Ḥ káa	Ḥ káa	Ḥ káa	Ḥ káa	Ḥ káa	Ḥ káa	Ḥ káa

Third Stage Reduced Version vowel rimes:

Ṽ kėj	Ṽ kėj	Ṽ kėj	Ṽ kėj	Ṽ kėj	Ṽ kėj	Ṽ kėj	Ṽ kėj
Ḍ kí	Ḍ kí	Ḍ kí	Ḍ kí	Ḍ kí	Ḍ kí	Ḍ kí	Ḍ kí
Ṁ káu	Ṁ káu	Ṁ káu	Ṁ káu	Ṁ káu	Ṁ káu	Ṁ káu	Ṁ káu
Ṃ kú	Ṃ kú	Ṃ kú	Ṃ kú	Ṃ kú	Ṃ kú	Ṃ kú	Ṃ kú
Ṇ ké	Ṇ ké	Ṇ ké	Ṇ ké	Ṇ ké	Ṇ ké	Ṇ ké	Ṇ ké
Ḣ kái	Ḣ kái	Ḣ kái	Ḣ kái	Ḣ kái	Ḣ kái	Ḣ kái	Ḣ kái
Ḥ kój	Ḥ kój	Ḥ kój	Ḥ kój	Ḥ kój	Ḥ kój	Ḥ kój	Ḥ kój
Ḧ káw	Ḧ káw	Ḧ káw	Ḧ káw	Ḧ káw	Ḧ káw	Ḧ káw	Ḧ káw
Ṁ kúa	Ṁ kúa	Ṁ kúa	Ṁ kúa	Ṁ kúa	Ṁ kúa	Ṁ kúa	Ṁ kúa
Ṃ kó	Ṃ kó	Ṃ kó	Ṃ kó	Ṃ kó	Ṃ kó	Ṃ kó	Ṃ kó
Ṅ kía	Ṅ kía	Ṅ kía	Ṅ kía	Ṅ kía	Ṅ kía	Ṅ kía	Ṅ kía
Ṇ ká	Ṇ ká	Ṇ ká	Ṇ ká	Ṇ ká	Ṇ ká	Ṇ ká	Ṇ ká
Ḣ kw	Ḣ kw	Ḣ kw	Ḣ kw	Ḣ kw	Ḣ kw	Ḣ kw	Ḣ kw
Ḥ káa	Ḥ káa	Ḥ káa	Ḥ káa	Ḥ káa	Ḥ káa	Ḥ káa	Ḥ káa

Final Version vowel rimes:

Ṽ kėj	Ṽ kėj	Ṽ kėj	Ṽ kėj	Ṽ kėj	Ṽ kėj	Ṽ kėj	Ṽ kėj
Ḍ kí	Ḍ kí	Ḍ kí	Ḍ kí	Ḍ kí	Ḍ kí	Ḍ kí	Ḍ kí
Ṁ káu	Ṁ káu	Ṁ káu	Ṁ káu	Ṁ káu	Ṁ káu	Ṁ káu	Ṁ káu
Ṃ kú	Ṃ kú	Ṃ kú	Ṃ kú	Ṃ kú	Ṃ kú	Ṃ kú	Ṃ kú
Ṇ ké	Ṇ ké	Ṇ ké	Ṇ ké	Ṇ ké	Ṇ ké	Ṇ ké	Ṇ ké
Ḣ kái	Ḣ kái	Ḣ kái	Ḣ kái	Ḣ kái	Ḣ kái	Ḣ kái	Ḣ kái
Ḥ kój	Ḥ kój	Ḥ kój	Ḥ kój	Ḥ kój	Ḥ kój	Ḥ kój	Ḥ kój
Ḧ káw	Ḧ káw	Ḧ káw	Ḧ káw	Ḧ káw	Ḧ káw	Ḧ káw	Ḧ káw
Ṁ kúa	Ṁ kúa	Ṁ kúa	Ṁ kúa	Ṁ kúa	Ṁ kúa	Ṁ kúa	Ṁ kúa
Ṃ kó	Ṃ kó	Ṃ kó	Ṃ kó	Ṃ kó	Ṃ kó	Ṃ kó	Ṃ kó
Ṅ kía	Ṅ kía	Ṅ kía	Ṅ kía	Ṅ kía	Ṅ kía	Ṅ kía	Ṅ kía
Ṇ ká	Ṇ ká	Ṇ ká	Ṇ ká	Ṇ ká	Ṇ ká	Ṇ ká	Ṇ ká
Ḣ kw	Ḣ kw	Ḣ kw	Ḣ kw	Ḣ kw	Ḣ kw	Ḣ kw	Ḣ kw
Ḥ káa	Ḥ káa	Ḥ káa	Ḥ káa	Ḥ káa	Ḥ káa	Ḥ káa	Ḥ káa

5.1 Resolving the Vowel Rime Names

For the Second Stage Reduced Version and Third State Reduced Version vowel rimes, whose names would be most accepted and used by the communities, the vowel rime names derived from the tables shown above would be:

<i>Glyph</i>	<i>Second</i>	<i>Third</i>
∇	keem	keeb
⌋	kee	keev
Λ	kim	kib
⌘	ki	kiv
∩	kaum	kaub
∅	kau	kauv
∪	kum	kub
∩	ke	kuv
∪	kem	keb
⌘	<i>kev</i>	<i>kev</i>
⌘	kaim	kaib
∪	kai	kaiv
∪	<i>koob</i>	<i>koob</i>
∪	<i>koov</i>	<i>koov</i>
∪	<i>kawb</i>	<i>kawb</i>
∪	kaw	kawv
∪	kuam	kuab
∪	kua	kuav
∩	kom	kob
∪	kog	kov
∪	<i>kiab</i>	<i>kiab</i>
Λ	kia	kiav
⌋	kam	kab
∪	<i>kav</i>	<i>kav</i>
∪	kwm	kwb
∪	<i>kwv</i>	<i>kwv</i>
∪	kaam	kaab
∪	<i>kaav</i>	<i>kaav</i>

Where these vowel rime names are identical, they are simply used as the name for the corresponding character in the code chart. Where they are not identical (identical ones are *italicized* above), a choice has to be made for the encoded character name, and the proposed choice is to use the Third Stage Reduced Version names in those cases, for consistency. In all cases, where the Second Stage and Third Stage names differ, the Second Stage name is added to the code chart as an alias, so that users of either system can easily find names appropriate to their usage.

Note that while the spellings of these vowel rimes in Latin letters is rather different, the differences are in the final letters, which transcribe the tones for the syllables. So the actual difference in the syllables used to represent the names is just in the tones used for them.

6. Unicode Character Properties.

16B00;PAHAWH HMONG VOWEL KEEB;Lo;0;L;;;;N;;;;;
 16B01;PAHAWH HMONG VOWEL KEEV;Lo;0;L;;;;N;;;;;
 16B02;PAHAWH HMONG VOWEL KIB;Lo;0;L;;;;N;;;;;
 16B03;PAHAWH HMONG VOWEL KIV;Lo;0;L;;;;N;;;;;
 16B04;PAHAWH HMONG VOWEL KAUB;Lo;0;L;;;;N;;;;;
 16B05;PAHAWH HMONG VOWEL KAUV;Lo;0;L;;;;N;;;;;
 16B06;PAHAWH HMONG VOWEL KUB;Lo;0;L;;;;N;;;;;
 16B07;PAHAWH HMONG VOWEL KUV;Lo;0;L;;;;N;;;;;
 16B08;PAHAWH HMONG VOWEL KEB;Lo;0;L;;;;N;;;;;
 16B09;PAHAWH HMONG VOWEL KEV;Lo;0;L;;;;N;;;;;
 16B0A;PAHAWH HMONG VOWEL KAIB;Lo;0;L;;;;N;;;;;
 16B0B;PAHAWH HMONG VOWEL KAIV;Lo;0;L;;;;N;;;;;
 16B0C;PAHAWH HMONG VOWEL KOOB;Lo;0;L;;;;N;;;;;
 16B0D;PAHAWH HMONG VOWEL KOOV;Lo;0;L;;;;N;;;;;
 16B0E;PAHAWH HMONG VOWEL KAWB;Lo;0;L;;;;N;;;;;
 16B0F;PAHAWH HMONG VOWEL KAVV;Lo;0;L;;;;N;;;;;
 16B10;PAHAWH HMONG VOWEL KUAB;Lo;0;L;;;;N;;;;;
 16B11;PAHAWH HMONG VOWEL KUAV;Lo;0;L;;;;N;;;;;
 16B12;PAHAWH HMONG VOWEL KOB;Lo;0;L;;;;N;;;;;
 16B13;PAHAWH HMONG VOWEL KOV;Lo;0;L;;;;N;;;;;
 16B14;PAHAWH HMONG VOWEL KIAB;Lo;0;L;;;;N;;;;;
 16B15;PAHAWH HMONG VOWEL KIAV;Lo;0;L;;;;N;;;;;
 16B16;PAHAWH HMONG VOWEL KAB;Lo;0;L;;;;N;;;;;
 16B17;PAHAWH HMONG VOWEL KAV;Lo;0;L;;;;N;;;;;
 16B18;PAHAWH HMONG VOWEL KWB;Lo;0;L;;;;N;;;;;
 16B19;PAHAWH HMONG VOWEL KWV;Lo;0;L;;;;N;;;;;
 16B1A;PAHAWH HMONG VOWEL KAAB;Lo;0;L;;;;N;;;;;
 16B1B;PAHAWH HMONG VOWEL KAAV;Lo;0;L;;;;N;;;;;
 16B1C;PAHAWH HMONG CONSONANT VAU;Lo;0;L;;;;N;;;;;
 16B1D;PAHAWH HMONG CONSONANT NKAU;Lo;0;L;;;;N;;;;;
 16B1E;PAHAWH HMONG CONSONANT XAU;Lo;0;L;;;;N;;;;;
 16B1F;PAHAWH HMONG CONSONANT CAU;Lo;0;L;;;;N;;;;;
 16B20;PAHAWH HMONG CONSONANT LAU;Lo;0;L;;;;N;;;;;
 16B21;PAHAWH HMONG CONSONANT HAU;Lo;0;L;;;;N;;;;;
 16B22;PAHAWH HMONG CONSONANT YAU;Lo;0;L;;;;N;;;;;
 16B23;PAHAWH HMONG CONSONANT QHAU;Lo;0;L;;;;N;;;;;
 16B24;PAHAWH HMONG CONSONANT RAU;Lo;0;L;;;;N;;;;;
 16B25;PAHAWH HMONG CONSONANT MAU;Lo;0;L;;;;N;;;;;
 16B26;PAHAWH HMONG CONSONANT NAU;Lo;0;L;;;;N;;;;;
 16B27;PAHAWH HMONG CONSONANT NLAU;Lo;0;L;;;;N;;;;;
 16B28;PAHAWH HMONG CONSONANT HLAU;Lo;0;L;;;;N;;;;;
 16B29;PAHAWH HMONG CONSONANT HNAU;Lo;0;L;;;;N;;;;;
 16B2A;PAHAWH HMONG CONSONANT CHAU;Lo;0;L;;;;N;;;;;
 16B2B;PAHAWH HMONG CONSONANT NCHAU;Lo;0;L;;;;N;;;;;
 16B2C;PAHAWH HMONG CONSONANT PLHAU;Lo;0;L;;;;N;;;;;
 16B2D;PAHAWH HMONG CONSONANT NTHAU;Lo;0;L;;;;N;;;;;
 16B2E;PAHAWH HMONG CONSONANT N TSAU;Lo;0;L;;;;N;;;;;
 16B2F;PAHAWH HMONG CONSONANT AU;Lo;0;L;;;;N;;;;;
 16B30;PAHAWH HMONG MARK CIM TUB;Mn;230;NSM;;;;N;;;;;
 16B31;PAHAWH HMONG MARK CIM SO;Mn;230;NSM;;;;N;;;;;
 16B32;PAHAWH HMONG MARK CIM KES;Mn;230;NSM;;;;N;;;;;
 16B33;PAHAWH HMONG MARK CIM KHAV;Mn;230;NSM;;;;N;;;;;
 16B34;PAHAWH HMONG MARK CIM SUAM;Mn;230;NSM;16B32 16B30;;;;N;;;;;
 16B35;PAHAWH HMONG MARK CIM HOM;Mn;230;NSM;16B32 16B31;;;;N;;;;;
 16B36;PAHAWH HMONG MARK CIM TAUM;Mn;230;NSM;;;;N;;;;;
 16B37;PAHAWH HMONG SIGN VOS THOM;Po;0;L;;;;N;;;;;
 16B38;PAHAWH HMONG SIGN VOS TSHAB CEEB;Po;0;L;;;;N;;;;;
 16B39;PAHAWH HMONG SIGN VOS SEEV;Lm;0;L;;;;N;;;;;
 16B3A;PAHAWH HMONG SIGN VOS NRUA;Lm;0;L;;;;N;;;;;
 16B3B;PAHAWH HMONG SIGN VOS THIAB;Po;0;L;;;;N;;;;;
 16B3C;PAHAWH HMONG SIGN VOS FEEM;Po;0;L;;;;N;;;;;
 16B40;PAHAWH HMONG DIGIT ZERO;Nd;0;L;0;0;0;N;;;;;
 16B41;PAHAWH HMONG DIGIT ONE;Nd;0;L;1;1;1;N;;;;;
 16B42;PAHAWH HMONG DIGIT TWO;Nd;0;L;2;2;2;N;;;;;
 16B43;PAHAWH HMONG DIGIT THREE;Nd;0;L;3;3;3;N;;;;;
 16B44;PAHAWH HMONG DIGIT FOUR;Nd;0;L;4;4;4;N;;;;;
 16B45;PAHAWH HMONG DIGIT FIVE;Nd;0;L;5;5;5;N;;;;;
 16B46;PAHAWH HMONG DIGIT SIX;Nd;0;L;6;6;6;N;;;;;
 16B47;PAHAWH HMONG DIGIT SEVEN;Nd;0;L;7;7;7;N;;;;;
 16B48;PAHAWH HMONG DIGIT EIGHT;Nd;0;L;8;8;8;N;;;;;
 16B49;PAHAWH HMONG DIGIT NINE;Nd;0;L;9;9;9;N;;;;;
 16B4A;PAHAWH HMONG NUMBER TENS;No;0;L;;;10;N;;;;;
 16B4B;PAHAWH HMONG NUMBER HUNDREDS;No;0;L;;;100;N;;;;;
 16B4C;PAHAWH HMONG NUMBER TEN THOUSANDS;No;0;L;;;10000;N;;;;;
 16B4D;PAHAWH HMONG NUMBER MILLIONS;No;0;L;;;1000000;N;;;;;
 16B4E;PAHAWH HMONG NUMBER HUNDRED MILLIONS;No;0;L;;;100000000;N;;;;;
 16B4F;PAHAWH HMONG NUMBER TEN THOUSAND MILLIONS;No;0;L;;;1000000000;N;;;;;
 16B50;PAHAWH HMONG NUMBER BILLIONS;No;0;L;;;100000000000;N;;;;;
 16B51;PAHAWH HMONG SIGN VOS LUB;Lm;0;L;;;;N;;;;;
 16B52;PAHAWH HMONG SIGN XYOO;So;0;L;;;;N;;;;;
 16B53;PAHAWH HMONG SIGN HLI;So;0;L;;;;N;;;;;
 16B54;PAHAWH HMONG SIGN ZWJ THAJ;So;0;L;;;;N;;;;;
 16B55;PAHAWH HMONG SIGN HNUB;So;0;L;;;;N;;;;;
 16B56;PAHAWH HMONG SIGN NTUJ;So;0;L;;;;N;;;;;
 16B57;PAHAWH HMONG SIGN XYEEM NTXIV;Sm;0;ES;;;;N;;;;;
 16B58;PAHAWH HMONG SIGN XYEEM RHO;Sm;0;ES;;;;N;;;;;

