

Universal Multiple-Octet Coded Character Set
International Organization for Standardization
Organisation internationale de normalisation
Международная организация по стандартизации

Doc Type: Working Group Document
Title: Revised Proposal to add the Leke Script in the SMP of the UCS
Source: Erich Fickle, Martin Hosken
Status: Individual Contribution
Action: For consideration by JTC1/SC2/WG2
Date: 2013-04-26

1. Introduction:

This document is a revised proposal on the Leke script used by the Eastern Pwo Karen in Thailand and neighbouring countries. The Karen people live mostly in mountainous regions on the border between Thailand and Myanmar, speaking a wide range of dialects. The Eastern Pwo Karen who use the Leke script have a partially mutually intelligible dialect from the Pwo Karen further south around Kamchanaburi, with a slightly different tone structure and reduced vowel inventory.

The Leke script was developed before the 1860s (Stern 1968a) with some assumed borrowings from Ancient Mon. A few of the letters share the shape and function of older versions of the Burmese script. The script is used by Buddhists, Christians and members of a unique Ariya religion. There are over 3,200 trained teachers of the script, according to the head of the Leke priesthood.

This Revised Proposal is based on more complete information and community testing after the Preliminary Proposal (ISO/IEC JTC1/SC2/WG2 N3768).

2. Structure:

The language and related languages has a syllable structure which is functionally consonant plus vowels with tone. This allows the script to construct grapheme clusters arranged around a single base character. The users consider each grapheme to be a separate character. There are no final consonants.

Texts in this script are written left to right. The writing is structured by syllables, and spaces are used between words. The vowels and syllable coda are structured around the initial base character. The initial is usually a consonant. For reference, we are calling the base character a consonant, regardless of the actual linguistic value.

Tones are phonemic, but phonetically they are combination of vowel length, tone and other characteristics such as breathiness.

There are no contextual forms of the letters. However, in older handwritten documents the LEKE TONE DWAH PI sometimes will appear above the base character rather than on the right in each syllable. The reasons were artistic depending on arrangement of whitespace but should not change the text encoding.

There is a small set of characters which are often written rotated 90 degrees. This rotation is arbitrary and has no meaning. The rotation is done for artistic reasons or to fit text within a particular space when handwritten. As Leke script users become used to typesetting rather than handwriting, it is possible that in the future a different rotation choice may become accepted as a de facto standard form.

Ornamental dots are frequently put inside characters with enclosed open space inside, such as the glyph pairs /ᄁ/ , /ᄂ/. There is an exception where the dots do have meaning, in the pair /ᄃ/ , /ᄄ/. Also dots are sometimes omitted or not clearly visible with handwriting in the letter /ᄅ/, but in this case the dot is always used in typography because of the possible confusion with LEKE DIGIT ZERO.

There is a unique Leke set of digits.

A line break should not occur inside a word. Line breaking may occur after whitespace or after other punctuation. Line breaking should never occur between a LEKE VOWEL DWIA THWAI, or LEKE VOWEL RI YAH and a following consonant.

There is a special character for LEKE END OF SECTION. There is a large amount of variation in the glyphs of this character and there is additional confusion because in hand written documents similar drawings are often used to avoid blank space after the end of a paragraph. The LEKE END OF SECTION always looks like a dampened wave shape.

The names of the characters have been changed from the preliminary proposal because exact pronunciation is now known. All of the names were changed to the names of the characters used by the users.

The LEKE VOWEL LONG DUU is like a killer, but /ᄆ/ does not kill an inherent vowel, instead it turns characters representing consonants into different vowels and kills the initial portion of the consonant's sound. The LEKE VOWEL LONG PUU is similar with different consonants. This works very differently than killers in Burmese or Indic languages. The users consider it just another vowel. Even though linguistically the behaviour is very interesting, from a text processing point of view they are only other joining characters.

Text encoding order for each syllable must be the consonant first, LEKE VOWEL RI YAH, LEKE VOWEL DWIA THWAI, then vowels moving out. Text encoding structure order is CM?P?V* (A|Z)? T?

Where P is a prevowel (11B74);

Where V is another vowel (11B70-11B73, 11B75, 11B77, 11B78);

Where A is an “after vowel” (11B6C, 11B76);

Where Z is a vowelized consonant consisting of a C followed by either 11B7D or 11B7E;

Where T is a tone (11B6D, 11B6E, or 11B6F).

2.1 Sort order

There has been an established sort order since before 1958, when the first literacy primers were printed using lead type. This order is the same as hand written copy books which might be older. Regardless of the age of the sort order, the sort order is firmly established today. The sort order follows simple binary order, as presented in the charts.

3 Characters:

LEKE

11B	5	6	7	8
0	၁	၂	၀ ^၁	၀
1	၂	၃	၀ ^၂	၁
2	၃	၄	၀ ^၃	၂
3	၄	၅	၀ ^၄	၃
4	၅	၆	၀ ^၅	၄
5	၆	၇	၀ ^၆	၅
6	၇	၈	၀ ^၇	၆
7	၈	၉	၀ ^၈	၇
8	၉	၀	၀ ^၉	၈
9	၀		၀ ^၀	၉
A	၁		၀ ^၁	၀
B	၂		၀ ^၂	
C	၃	၁	၀ ^၃	
D	၄	၂	၀ ^၄	
E	၅	၃	၀ ^၅	
F	၆	၄		

Consonants

11B50	ᵛ	LEKE LETTER KA
11B51	/	LEKE LETTER KHA
11B52	ᵛ	LEKE LETTER NGA
11B53	✓	LEKE LETTER CA
11B54	ᵛ	LEKE LETTER CHA
11B55	ᶒ	LEKE LETTER NJA
11B56	ᶒ	LEKE LETTER DA
11B57	ᵛ	LEKE LETTER THA
11B58	ᵛ	LEKE LETTER NA
11B59	ᵛ	LEKE LETTER SA
11B5A	ᵛ	LEKE LETTER PA
11B5B	//	LEKE LETTER PHA
11B5C	ᶑ	LEKE LETTER MA
11B5D	ᶑ	LEKE LETTER YA
11B5E	ᶑ	LEKE LETTER RA
11B5F	ᶑ	LEKE LETTER LA
11B60	ᶑ	LEKE LETTER WA
11B61	ᶑ	LEKE LETTER THA
11B62	ᶑ	LEKE LETTER JHA
11B63	ᶑ	LEKE LETTER HA
11B64	ᶑ	LEKE LETTER XHA
11B65	ᶑ	LEKE LETTER LYWRA
11B66	ᶑ	LEKE LETTER AH
11B67	ᶑ	LEKE LETTER BA
11B68	ᶑ	LEKE LETTER DA

Vowels and tones

11B6C	ᵛᵛ	LEKE VOWEL DWIA THA
11B6D	ᵛᵛ	LEKE TONE DWAH PI • High tone mark
11B6E	ᵛᵛ	LEKE TONE THA LONG • Low tone mark
11B6F	ᵛᵛ	LEKE TONE THA PI • Changing tone mark
11B70	ᵛᵛ	LEKE VOWEL DONG DWA
11B71	ᵛᵛ	LEKE VOWEL DONG GALII
11B72	ᵛᵛ	LEKE VOWEL SONG NU CHU
11B73	ᵛᵛ	LEKE VOWEL THWUI GLU
11B74	ᵛᵛ	LEKE VOWEL DWIA THWAI
11B75	ᵛᵛ	LEKE VOWEL CHI CHONG
11B76	ᵛᵛ	LEKE VOWEL DWIA THA PATAH
11B77	ᵛᵛ	LEKE VOWEL DONG PI PATAH
11B78	ᵛᵛ	LEKE VOWEL THA SUE
11B79	ᵛᵛ	LEKE VOWEL BOW YA
11B7A	ᵛᵛ	LEKE VOWEL BOW WA
11B7B	ᵛᵛ	LEKE VOWEL BOW LA
11B7C	ᵛᵛ	LEKE VOWEL RI YAH
11B7D	ᵛᵛ	LEKE VOWEL LONG PUU
11B7E	ᵛᵛ	LEKE VOWEL LONG DUU

Digits

11B80	○	LEKE DIGIT ZERO
11B81	√	LEKE DIGIT ONE
11B82	∂	LEKE DIGIT TWO
11B83	∩	LEKE DIGIT THREE
11B84	∪	LEKE DIGIT FOUR
11B85	∫	LEKE DIGIT FIVE
11B86	∫	LEKE DIGIT SIX
11B87	∩	LEKE DIGIT SEVEN
11B88	∩	LEKE DIGIT EIGHT
11B89	∩	LEKE DIGIT NINE

Punctuation

11B8A	∩	LEKE END OF SECTION
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Unicode Properties

11B50;LEKE LETTER KA;Lo;0;L;;;;;N;;;;;
11B51;LEKE LETTER KHA;Lo;0;L;;;;;N;;;;;
11B52;LEKE LETTER NGA;Lo;0;L;;;;;N;;;;;
11B53;LEKE LETTER CA;Lo;0;L;;;;;N;;;;;
11B54;LEKE LETTER CHA;Lo;0;L;;;;;N;;;;;
11B55;LEKE LETTER NJA;Lo;0;L;;;;;N;;;;;
11B56;LEKE LETTER DA;Lo;0;L;;;;;N;;;;;
11B57;LEKE LETTER THA;Lo;0;L;;;;;N;;;;;
11B58;LEKE LETTER NA;Lo;0;L;;;;;N;;;;;
11B59;LEKE LETTER SA;Lo;0;L;;;;;N;;;;;
11B5A;LEKE LETTER PA;Lo;0;L;;;;;N;;;;;
11B5B;LEKE LETTER PHA;Lo;0;L;;;;;N;;;;;
11B5C;LEKE LETTER MA;Lo;0;L;;;;;N;;;;;
11B5D;LEKE LETTER YA;Lo;0;L;;;;;N;;;;;
11B5E;LEKE LETTER RA;Lo;0;L;;;;;N;;;;;
11B5F;LEKE LETTER LA;Lo;0;L;;;;;N;;;;;
11B60;LEKE LETTER WA;Lo;0;L;;;;;N;;;;;
11B61;LEKE LETTER THA;Lo;0;L;;;;;N;;;;;
11B62;LEKE LETTER JHA;Lo;0;L;;;;;N;;;;;
11B63;LEKE LETTER HA;Lo;0;L;;;;;N;;;;;
11B64;LEKE LETTER XHA;Lo;0;L;;;;;N;;;;;
11B65;LEKE LETTER LYWRA;Lo;0;L;;;;;N;;;;;
11B66;LEKE LETTER AH;Lo;0;L;;;;;N;;;;;
11B67;LEKE LETTER BA;Lo;0;L;;;;;N;;;;;
11B68;LEKE LETTER DA;Lo;0;L;;;;;N;;;;;

11B6C;LEKE VOWEL DWIA THA;Mc;0;L;;;;;N;;;;;
11B6D;LEKE TONE DWAH PI;Mn;0;L;;;;;N;;;;;
11B6E;LEKE TONE THA LONG;Mn;0;L;;;;;N;;;;;
11B6F;LEKE TONE THA PI;Mc;0;L;;;;;N;;;;;
11B70;LEKE VOWEL DONG DWA;Mn;0;L;;;;;N;;;;;
11B71;LEKE VOWEL DONG GALII;Mn;0;L;;;;;N;;;;;
11B72;LEKE VOWEL SONG NU CHU;Mn;0;NSM;;;;;N;;;;;
11B73;LEKE VOWEL THWUI GLU;Mn;0;NSM;;;;;N;;;;;
11B74;LEKE VOWEL DWIA THAWAI;Mn;0;NSM;;;;;N;;;;;
11B75;LEKE VOWEL CHI CHONG;Mn;0;NSM;;;;;N;;;;;
11B76;LEKE VOWEL DWIA THA PATAH;Mc;0;NSM;;;;;N;;;;;
11B77;LEKE VOWEL DONG PI PATAH;Mn;0;NSM;;;;;N;;;;;
11B78;LEKE VOWEL THA SUE;Mn;0;NSM;;;;;N;;;;;
11B79;LEKE VOWEL BOW YA;Mn;0;NSM;;;;;N;;;;;
11B7A;LEKE VOWEL BOW WA;Mn;0;NSM;;;;;N;;;;;
11B7B;LEKE VOWEL BOW LA;Mn;0;NSM;;;;;N;;;;;
11B7C;LEKE VOWEL RI YAH;Mn;0;NSM;;;;;N;;;;;
11B7D;LEKE VOWEL LONG PUU;Mn;0;NSM;;;;;N;;;;;
11B7E;LEKE VOWEL LONG DUU;Mn;0;NSM;;;;;N;;;;;

11B80;LEKE DIGIT 0;Nd;0;L;;0;0;0;N;;;;;
11B81;LEKE DIGIT 1;Nd;0;L;;1;1;1;N;;;;;
11B82;LEKE DIGIT 2;Nd;0;L;;2;2;2;N;;;;;
11B83;LEKE DIGIT 3;Nd;0;L;;3;3;3;N;;;;;
11B84;LEKE DIGIT 4;Nd;0;L;;4;4;4;N;;;;;
11B85;LEKE DIGIT 5;Nd;0;L;;5;5;5;N;;;;;
11B86;LEKE DIGIT 6;Nd;0;L;;6;6;6;N;;;;;
11B87;LEKE DIGIT 7;Nd;0;L;;7;7;7;N;;;;;
11B88;LEKE DIGIT 8;Nd;0;L;;8;8;8;N;;;;;
11B89;LEKE DIGIT 9;Nd;0;L;;9;9;9;N;;;;;
11B8A;LEKE END OF SECTION;Po;0;ON;;;;;N;;;;;

Examples

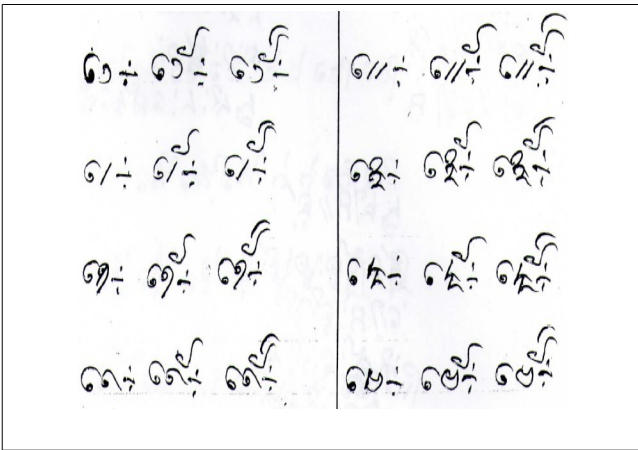


Figure 1: Examples from literacy copybook of showing glyph variation in rapid handwriting.

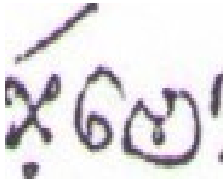


Figure 2 : Example of glyph variation with dot inside.



Figure 3: Example of Leke Leaf Book with ornamentation in a highly ornate style. It has no meaning and is not a variation of the End of Section.

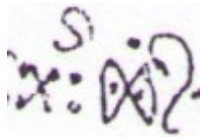


Figure 4: Example of dots inside.

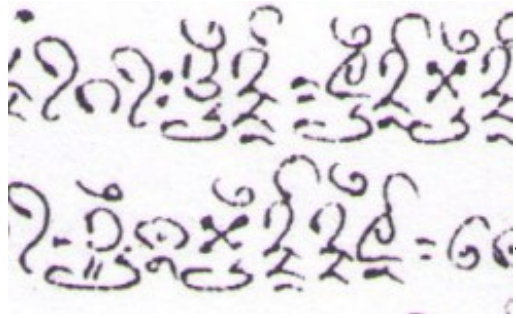


Figure 5: Examples of how the vowel diacritics and tone marks can stack. Note the flourishes at the ends of some characters, which are only ornamentation.

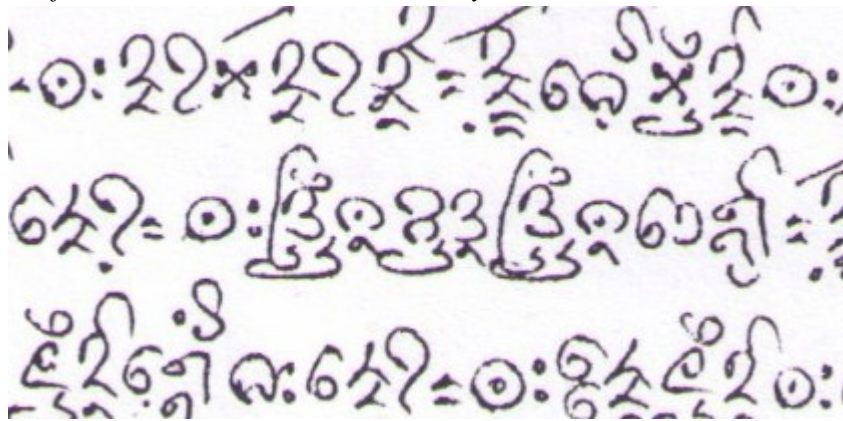


Figure 6: Example of dotted circle character drawn as either a circle or a dot.

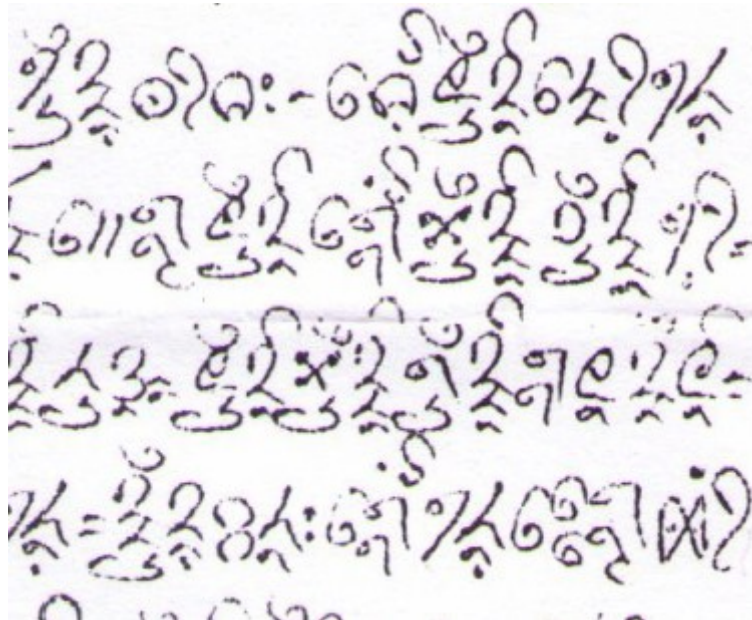


Figure 7: Example showing variation of staff-like glyphs in handwriting.

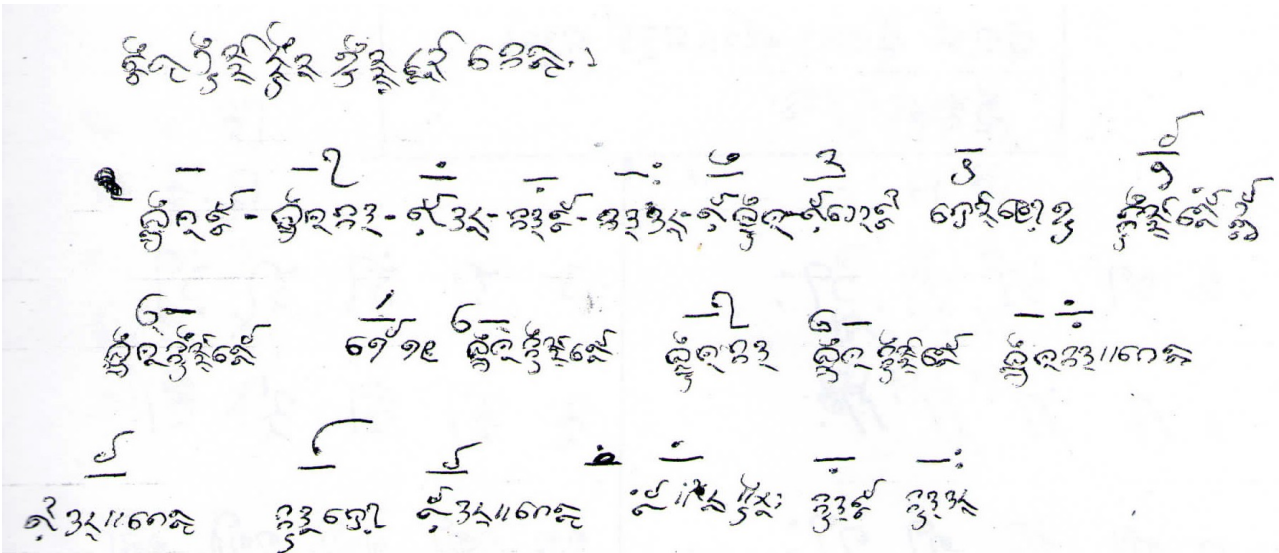


Figure 8: List of vowels from a Leke Copy Book. The dash appears to function like the Unicode Dotted Circle, except in some cases which look like the vowel /÷/.

၁ ဂါ ဝါ ဝါ ဝါ:

၂ ဂါ ဂါ ဂါ ဂါ:

၃ ဂါ ဂါ ဂါ ဂါ:

၄ ဂါ ဂါ ဂါ ဂါ:

၅ ဂါ ဂါ ဂါ ဂါ:

Figure 10: Leke Copy Book tone drill section which shows consonants combining with LEKE VOWEL DWIA THA . This also shows the handwriting tendency to move the vowels into white space.

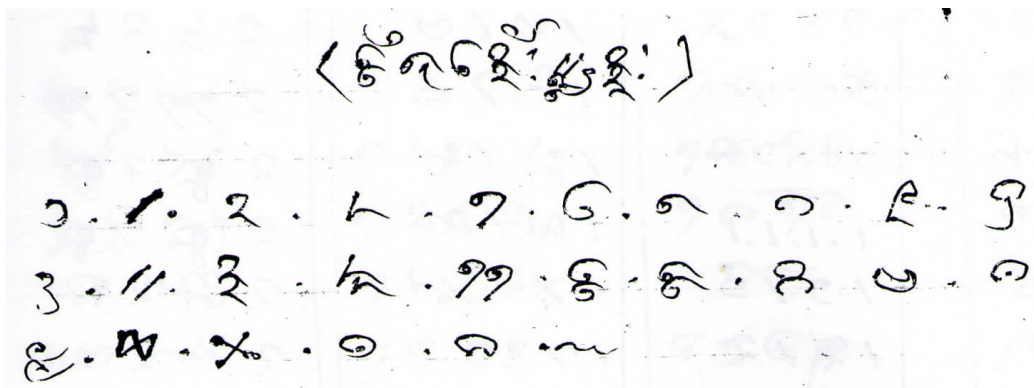


Figure 11: Yellow book example showing complete consonant list in accepted order. The glyph at the end is a LEKE END OF SECTION.

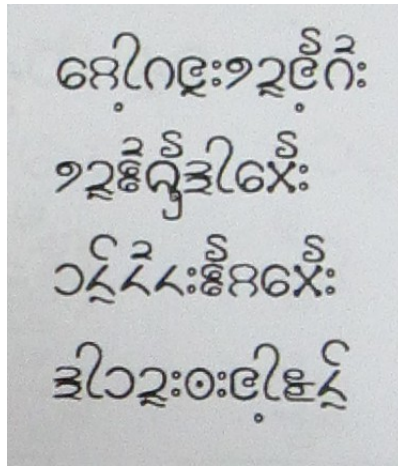


Figure 12: Example from Blue Primer that shows LEKE VOWEL DWIA THWAI starting a word, and consonants forming syllables without vowels.

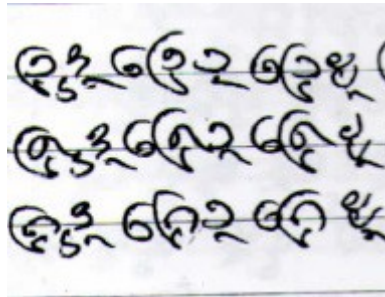


Figure 13: Example from Green Copybook showing multiple vowels on the left of the Consonant in the same syllable.

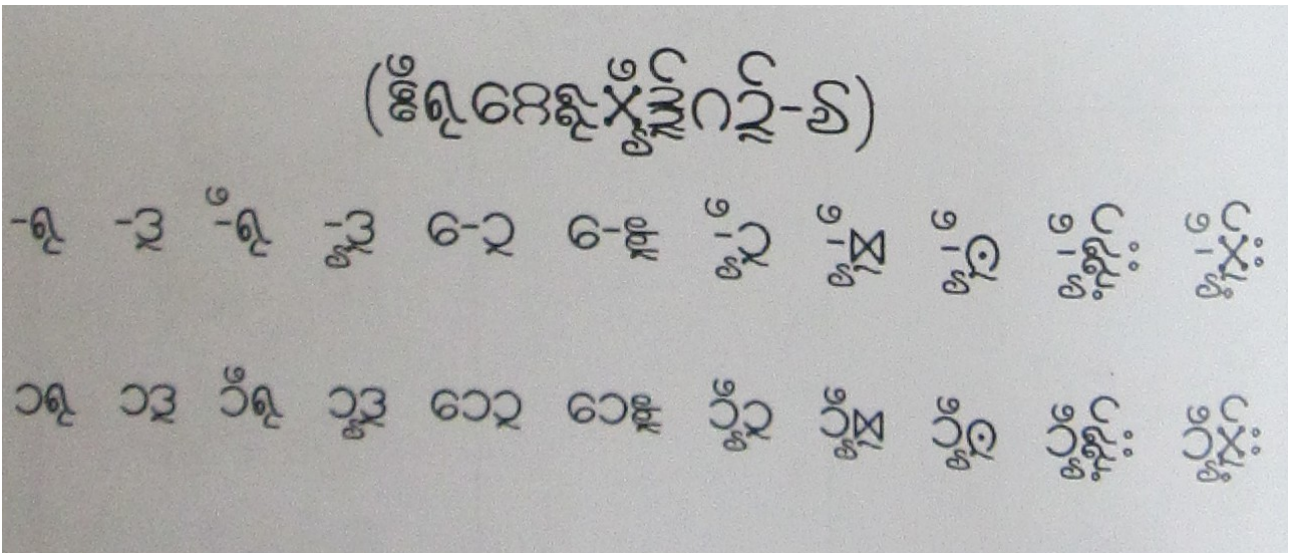


Figure 14: From Blue Primer showing complete list of complex vowels using LEKE VOWEL LONG DUU and LEKE VOWEL LONG PUU. The bottom line has example words.

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Unknown, Beige Primer, (first level).

Unknown, Blue Primer, (second level).

Unknown, Red Primer.

Unknown, Salmon Primer.

Unknown, White Primer, (highest level).

Unknown, Yellow Copybook.

Unknown, Green Copybook.

Unknown, Blue Copybook.

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Acknowledgements

Thanks go to the Payap University Linguistics Institute, Chiang Mai, Thailand, under whose auspices this work is done. Also thanks to David Morse who spent hours explaining what he had learned about how parts of the script worked. Paung Mla Mla, a Leke teacher and young font designer travelled from Australia at great personal expense in order to review this document helped with several critical suggestions. Many other Pwo Karen teachers of Leke, who wish to remain anonymous at this time, deserve special credit because without their help we might not have understood how this visually complex script worked. Finally, Richard Rees and Leigh Betts helped much more than taking valuable time out of their schedules and served as interpreters in meetings with Ariya religious leaders.

**ISO/IEC JTC 1/SC 2/WG 2
PROPOSAL SUMMARY FORM TO ACCOMPANY SUBMISSIONS
FOR ADDITIONS TO THE REPERTOIRE OF ISO/IEC 10646¹.**

Please fill all the sections A, B and C below.

Please read Principles and Procedures Document (P & P) from <http://www.dkuug.dk/JTC1/SC2/WG2/docs/principles.html> for guidelines and details before filling this form.

Please ensure you are using the latest Form from <http://www.dkuug.dk/JTC1/SC2/WG2/docs/summaryform.html>.

See also <http://www.dkuug.dk/JTC1/SC2/WG2/docs/roadmaps.html> for latest Roadmaps.

A. Administrative

1. Title:	<i>Leke</i>	
2. Requester's name:	<i>Erich Fickle, Martin Hosken</i>	
3. Requester type (Member body/Liaison/Individual contribution):	<i>Individual contribution</i>	
4. Submission date:	<i>20013/04/26</i>	
5. Requester's reference (if applicable):		
6. Choose one of the following:		
This is a complete proposal:		<i>X</i>
(or) More information will be provided later:		

B. Technical – General

1. Choose one of the following:		
a. This proposal is for a new script (set of characters):		<i>X</i>
Proposed name of script:	<i>Leke</i>	
b. The proposal is for addition of character(s) to an existing block:		
Name of the existing block:		
2. Number of characters in proposal:		<i>55</i>
3. Proposed category (select one from below - see section 2.2 of P&P document):		
A-Contemporary <input checked="" type="checkbox"/>	B.1-Specialized (small collection) <input type="checkbox"/>	B.2-Specialized (large collection) <input type="checkbox"/>
C-Major extinct <input type="checkbox"/>	D-Attested extinct <input type="checkbox"/>	E-Minor extinct <input type="checkbox"/>
F-Archaic Hieroglyphic or Ideographic <input type="checkbox"/>	G-Obscure or questionable usage symbols <input type="checkbox"/>	
4. Is a repertoire including character names provided?		
a. If YES, are the names in accordance with the "character naming guidelines" in Annex L of P&P document?		<i>yes</i>
b. Are the character shapes attached in a legible form suitable for review?		<i>yes</i>
5. Who will provide the appropriate computerized font (ordered preference: True Type, or PostScript format) for publishing the standard?		
	<i>Erich Fickle, Marten Hosken or David Morse</i>	
If available now, identify source(s) for the font (include address, e-mail, ftp-site, etc.) and indicate the tools used:		
	<i>erich.fickle@sil.org, created with FontForge</i>	
6. References:		
a. Are references (to other character sets, dictionaries, descriptive texts etc.) provided?		<i>yes</i>
b. Are published examples of use (such as samples from newspapers, magazines, or other sources) of proposed characters attached?		<i>yes</i>
7. Special encoding issues:		
Does the proposal address other aspects of character data processing (if applicable) such as input, presentation, sorting, searching, indexing, transliteration etc. (if yes please enclose information)?		<i>no</i>

8. Additional Information:

Submitters are invited to provide any additional information about Properties of the proposed Character(s) or Script that will assist in correct understanding of and correct linguistic processing of the proposed character(s) or script. Examples of such properties are: Casing information, Numeric information, Currency information, Display behaviour information such as line breaks, widths etc., Combining behaviour, Spacing behaviour, Directional behaviour, Default Collation behaviour, relevance in Mark Up contexts, Compatibility equivalence and other Unicode normalization related information. See the Unicode standard at <http://www.unicode.org> for such information on other scripts. Also see <http://www.unicode.org/Public/UNIDATA/UCD.html> and associated Unicode Technical Reports for information needed for consideration by the Unicode Technical Committee for inclusion in the Unicode Standard.

¹ Form number: N3102-F (Original 1994-10-14; Revised 1995-01, 1995-04, 1996-04, 1996-08, 1999-03, 2001-05, 2001-09, 2003-11, 2005-01, 2005-09, 2005-10, 2007-03)

C. Technical - Justification

1. Has this proposal for addition of character(s) been submitted before? If YES explain	<i>no</i>
2. Has contact been made to members of the user community (for example: National Body, user groups of the script or characters, other experts, etc.)? If YES, with whom? If YES, available relevant documents:	<i>partially</i>
3. Information on the user community for the proposed characters (for example: size, demographics, information technology use, or publishing use) is included? Reference:	<i>yes</i> <i>this document</i>
4. The context of use for the proposed characters (type of use; common or rare) Reference:	<i>common</i>
5. Are the proposed characters in current use by the user community? If YES, where? Reference:	<i>yes</i> <i>Thailand and others</i>
6. After giving due considerations to the principles in the P&P document must the proposed characters be entirely in the BMP? If YES, is a rationale provided? If YES, reference:	<i>no</i>
7. Should the proposed characters be kept together in a contiguous range (rather than being scattered)?	<i>yes</i>
8. Can any of the proposed characters be considered a presentation form of an existing character or character sequence? If YES, is a rationale for its inclusion provided? If YES, reference:	<i>no</i>
9. Can any of the proposed characters be encoded using a composed character sequence of either existing characters or other proposed characters? If YES, is a rationale for its inclusion provided? If YES, reference:	<i>no</i>
10. Can any of the proposed character(s) be considered to be similar (in appearance or function) to an existing character? If YES, is a rationale for its inclusion provided? If YES, reference:	<i>yes</i> <i>yes</i> <i>this document</i>
11. Does the proposal include use of combining characters and/or use of composite sequences? If YES, is a rationale for such use provided? If YES, reference: Is a list of composite sequences and their corresponding glyph images (graphic symbols) provided? If YES, reference:	<i>yes</i> <i>yes</i> <i>this document</i> <i>no</i>
12. Does the proposal contain characters with any special properties such as control function or similar semantics? If YES, describe in detail (include attachment if necessary)	<i>no</i>
13. Does the proposal contain any Ideographic compatibility character(s)? If YES, is the equivalent corresponding unified ideographic character(s) identified? If YES, reference:	<i>no</i>