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

Doc Type: Working Group Document

Title: Proposal to encode the Wancho script in the UCS

Source: UC Berkeley Script Encoding Initiative (Universal Scripts Project)

Author: Michael Everson Status: Liaison Contribution

Action: For consideration by JTC1/SC2/WG2 and UTC

Date: 2017-03-09

- **1. Introduction.** The Wancho language has some 51,000 speakers and is used chiefly in the southeast of Arunachal Pradesh, as well as in Assam and Nagaland. There are 64 villages in Longding, 4 villages in the Tirap district, 128 villages in Nagaland, over 23 villages in Myanmar, 3 in Bhutan and 4 in Assam, all where the language is spoken. Wancho is a Sino-Tibetan language of the Konyak subfamily of the Sal family spoken in eastern India, parts of Bangladesh, and Myanmar. The script was devised between 2001 and 2012 by Banwang Losu, a teacher at a government middle school in his home village in Longding District, Arunachal Pradesh. The Wancho script is taught today in schools.
- **2. Processing.** Wancho is a simple alphabetic script comprised of letters which represent both consonants and vowels. Diacritical marks are not used, and there are no conjunct characters. Digraphs and trigraphs are used to express various distinctions. A few characters are similar to other characters, distinguished by a diacritical mark, but this dot is not productive; while three of them appear in pairs in alphabetical order (\mathcal{L} SA SA, \mathcal{L} SHA SA; \mathcal{L} JA S
- **3. Orthography.** Tones are marked by repeating the final character to indicate low, mid, or high tone:

67 gi gì 'cane'	677 GII gi 'thread'	6777 GIII gi 'incise'	6719 GIQ gi? 'wilting'
๕๖ tu tù 'blunt'	ீ% tuu tu 'iron'	ชาใจใจ TUUU <i>tú</i> 'see'	ℰъ♪ tuq tu? 'thorn'
П& ка kà 'legs apart'	Ω <i>lτlτ</i> καα <i>ka</i> 'go'	Π <i>ltltlt</i> κααα <i>ká</i> 'door'	በረፖ/ KAQ ka? 'soil'
NJ KE kè 'buttock'	NJI KEE ke 'weak'		
ΩZ κι kì 'quarrel'	Ω77 kii <i>ki</i> 'dog'	$\Omega 777$ KIII ki 'hatch'	ΩΖΛ κιο ki? 'to salve'
1 o∂'noise'	าา oo o 'bird'	าาา $000~\acute{o}$ 'protect'	

The diphthongs /ai/ and /au/ may be short or long; /au/ is spelt somewhat differently when short. These are spelt $\partial i/ai$ and $\partial u/au$ here, though another transcription might be $ai/\bar{a}i$ and $ai/\bar{a}u$.

ΩΛ7 και kài 'give, let's'	Ω⁄⁄777 KAII k∂i 'bent'	Ω <i>2</i> 777 καιιι <i>kới</i> 'plant'	ΩΛ7Λ KAIQ kəi? 'flick'
ก <i>ไวไว</i> ₹ KAAI kài 'cough'	Ω <i>čtčt</i> 77 kaaii <i>kai</i> 'sputum'	Ω <i>ltlt</i> 777 κααιιι <i>kái</i> 'kick'	በ <i>ከከ</i> ሚያ KAAIQ kai? 'beat'
ี่ ให้ kàʊ 'he, she'	ี่ ใใใ KĂĂ k∂ʊ 'step'	ิ ถึงใง KĂ kớỡ 'run-off'	በባ <i></i> ዖ κል፬ <i>kàʊʔ</i> 'give'
Ωી∕7 ∕₀ kau kàʊ 'half'	∩∕7% kauu <i>kaʊ</i> —	Ω <i>ใ</i> 2 № ΚΑυυυ <i>kάʊ</i> —	በ <i>ሽ</i> ጐ እ KAUQ <i>kaʊʔ</i> 'prune'

There is apparently an inherent vowel when two consonants come together in two-character monosyllables (as in the last line below); nasalized vowels, rimes in the velar-nasal η and in -m also participate in this orthographic practice:

- **4. Non-alphabetic characters** are used in Wancho. Ordinary generic punctuation marks like COMMA and FULL STOP and QUESTION MARK are used in Wancho and can be represented by existing UCS characters.
- **5. Digits.** U+1E2F0-U+1E2F9 are the decimal digits 0–9. Common punctuation and operators are used for mathematical operations. See Figure 3.
- **6. Ordering.** The ordering of the character set follows that of the code chart. The first four characters are given in an order which resembles the Aramaic order used by many alphabets (*aa ba ca ga da*, sort of a hybrid of Latin and Greek $ABC\Gamma\Delta$) but this seems to be incidental and there is no particular similarity to that or any other order otherwise. Dotted letters are sorted as separate from their undotted counterparts.
- **7. Character names.** The character names here use the usual UCS transcription for the script of India: \mathcal{Z} AA a, \mathcal{L} BA b, \mathcal{S} CA tf, \mathcal{E} DA d, \mathcal{L} GA g, \mathcal{L} YA j, \mathcal{O} PHA p^h , \mathcal{L} LA l, \mathcal{L} NA n, \mathcal{L} PA p, \mathcal{E} TA t, \mathcal{L} THA θ , \rightarrow FA f, \mathcal{L} SA s, \mathcal{L} SHA f, \mathcal{L} JA $d\mathcal{L}$, \mathcal{L} ZA \mathcal{L} , \mathcal{O} WA \mathcal{W} , \mathcal{L} VA \mathcal{V} , \mathcal{L} KA \mathcal{L} , \mathcal{L} OD \mathcal{L} , \mathcal{L} AU \mathcal{L} , \mathcal{L} RA \mathcal{L} , \mathcal{L} CA \mathcal{L} AU \mathcal{L} , \mathcal{L} CA \mathcal{L} , \mathcal{L} CA

8. Unicode Character Properties.

```
1E2C0; WANCHO LETTER AA; Lo; 0; L;;;;; N;;;;
1E2C1; WANCHO LETTER BA; Lo; 0; L;;;;; N;;;;
1E2C2; WANCHO LETTER CA; Lo; 0; L;;;;; N;;;;
1E2C3; WANCHO LETTER DA; Lo; 0; L;;;;; N;;;;;
1E2C4; WANCHO LETTER GA; Lo; 0; L;;;;; N;;;;
1E2C5; WANCHO LETTER YA; Lo; 0; L;;;;; N;;;;
1E2C6; WANCHO LETTER PHA; Lo; 0; L;;;;; N;;;;
1E2C7; WANCHO LETTER LA; Lo; 0; L;;;;; N;;;;;
1E2C8; WANCHO LETTER NA; Lo; 0; L;;;;; N;;;;
1E2C9; WANCHO LETTER PA; Lo; 0; L;;;;; N;;;;
1E2CA; WANCHO LETTER TA; Lo; 0; L;;;;; N;;;;
1E2CB; WANCHO LETTER THA; Lo; 0; L;;;;; N;;;;
1E2CC; WANCHO LETTER FA; Lo; 0; L;;;;; N;;;;
1E2CD; WANCHO LETTER
                      SA;Lo;0;L;;;;;N;;;;
1E2CE; WANCHO LETTER SHA; Lo; 0; L;;;;; N;;;;
1E2CF:WANCHO LETTER
                      JA;Lo;0;L;;;;;N;;;;
1E2D0:WANCHO LETTER
                      ZA;Lo;0;L;;;;;N;;;;
1E2D1; WANCHO LETTER WA; Lo; 0; L;;;;; N;;;;
1E2D2; WANCHO LETTER VA; Lo; 0; L;;;;; N;;;;;
1E2D3; WANCHO LETTER KA; Lo; 0; L;;;;; N;;;;
1E2D4; WANCHO LETTER O; Lo; 0; L;;;;; N;;;;
1E2D5; WANCHO LETTER AU; Lo; 0; L;;;;; N;;;;
1E2D6; WANCHO LETTER RA; Lo; 0; L;;;;; N;;;;
1E2D7; WANCHO LETTER MA; Lo; 0; L;;;;; N;;;;
1E2D8; WANCHO LETTER KHA; Lo; 0; L;;;;; N;;;;
1E2D9; WANCHO LETTER HA; Lo; 0; L;;;;; N;;;;
1E2DA; WANCHO LETTER E; Lo; 0; L;;;;; N;;;;;
1E2DB; WANCHO LETTER I; Lo; 0; L;;;;; N;;;;;
1E2DC; WANCHO LETTER NGA; Lo; 0; L;;;;; N;;;;
1E2DD; WANCHO LETTER U; Lo; 0; L;;;;; N;;;;
1E2DE; WANCHO LETTER LLHA; Lo; 0; L;;;;; N;;;;
1E2DF; WANCHO LETTER TSA; Lo; 0; L;;;;; N;;;;;
1E2E0; WANCHO LETTER TRA; Lo; 0; L;;;;; N;;;;;
1E2E1; WANCHO LETTER ONG; Lo; 0; L;;;;; N;;;;;
1E2E2; WANCHO LETTER ANG; Lo; 0; L;;;;; N;;;;;
1E2E3; WANCHO LETTER ING; Lo; 0; L;;;;; N;;;;
1E2E4; WANCHO LETTER ON; Lo; 0; L;;;;; N;;;;
1E2E5; WANCHO LETTER EN; Lo; 0; L;;;;; N;;;;
```

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1E2E6; WANCHO LETTER AN; Lo; 0; L;;;; N;;;; 1E2E7; WANCHO LETTER NYA; Lo; 0; L;;;; N;;;; 1E2E8; WANCHO LETTER UN; Lo; 0; L;;;; N;;;; 1E2E9; WANCHO LETTER YIH; Lo; 0; L;;;; N;;;; 1E2F0; WANCHO DIGIT ZERO; Nd; 0; L;; 0; 0; 0; 0, N;;;; 1E2F1; WANCHO DIGIT TWO; Nd; 0; L;; 1; 1; 1; N;;;; 1E2F2; WANCHO DIGIT TWO; Nd; 0; L;; 2; 2; 2; N;;;; 1E2F3; WANCHO DIGIT THREE; Nd; 0; L;; 3; 3; 3; N;;;; 1E2F4; WANCHO DIGIT FOUR; Nd; 0; L;; 4; 4; 4; N;;;; 1E2F5; WANCHO DIGIT FIVE; Nd; 0; L;; 5; 5; 5; N;;;; 1E2F6; WANCHO DIGIT SIX; Nd; 0; L;; 6; 6; 6; N;;;; 1E2F7; WANCHO DIGIT SEVEN; Nd; 0; L;; 7; 7; 7; N;;;; 1E2F9; WANCHO DIGIT EIGHT; Nd; 0; L;; 8; 8; 8; N;;;; 1E2F9; WANCHO DIGIT NINE; Nd; 0; L;; 9; 9; 9; N;;;; 1E2FA; WANCHO NGUN SIGN; Sc; 0; ET;;;; N;;;;
```

9. References

Losu, Banwang. 2013. The Wancho Script. New Delhi: Partridge India. ISBN 978-1-4828-1251-0

10. Acknowledgements. This project was made possible in part by a grant from the U.S. National Endowment for the Humanities, which funded the Universal Scripts Project (part of the Script Encoding Initiative at UC Berkeley) in respect of the Wancho encoding. Any views, findings, conclusions or recommendations expressed in this publication do not necessarily reflect those of the National Endowment for the Humanities.

Figures.



Figure 1. Chart of the Wancho alphabet. The gap appears between the letters which are used for sounds common to other languages of India, and sounds which are considered unique to Wancho. From Losu 2013:31.

11 SIMILARITIES

(Similar in sound, different in meaning)

(Short Vowel Sounds)				(L	(Long Vowel Sounds)		
Wan	cho	English	-	Wanc	ho	English	
Ltt	Ва	Gap	=	Litit	Baa	Teeth/Axe	
64	Ban	Fire	=	122	Bann	10(Ten)	
12	Bea	Group	=	122	Bea*	Pull	
(%	Bu	Hot(Chill	i) –	€ %	Воо	Itching/Scabies	
æ	Bo*	Scrotum	-	LAA	Bo*	Song	
Flt	Cha	One	-	fitt	Chaa	Remainder	
ρ٩	Cho	Chest	_	∕જ્યા	Cho	Summer	
چېر	Cham	What	=	۶۳۳	Cham	Food	
<i>F</i> 7	Chi	Water	-	<i>F</i> 77	Chee	Penis	
Ett	Da	Slave	=	Etete	Daa	Rough surface	
86	Dam	Bamboo ma	t =	<i>?%</i>	Damm	Careless	
<i>8</i> 7	Di	Shield	-	877	Dee	Die	
611	Ga	Useless	-	61111	Gaa	Afraid/Fear	
64	Gan	Fence	-	644	Gann	Shame	
67	Gi	Cane	-	677	Gee	Thread	
65	Gong	Horn	_	655	Gonng	Strong	
Бà	Go*	Bamboo	-	6AA	Go:*	Discussion/	
						Meeting	

* symbol shows incomplete pronunciation Glottal Stops, IPA symbol 'P' is used in English and Colon [:] is used in Hindi

Wanc	ho	English	-	Wancho		English		
42	No*	Basket	_	422	No*	Turning		
47	Ni	Smile	-	477	Nee	Cloths		
16	Pan	Tree	=	144	Pann	Rule		
1.7	Pi	Fly	-	122	Pee	Bend		
6^6	Tu	Not sharp	-,	6° 7670	Too	See		
34	Than	Face	=	344	Thann	Target		
กร	Ki	Quarrel	-	UZZZ	Kee	Chick comes		
						out of egg		
ข	О	Noise	=	ขข	0	Bird		
% 4	Man	No	-	844	Mann	Name		
۸4	Khan	Yam	-	144	Khann	Buried		
<i>ጜለ</i> ፖ	Mai	Good	-	<i>CA</i> 77	Maie	Animals/Meat		
7 ≯	Ja*	Water	=	7**	Ja*	Bone		
St	Nga	Tire	-	Stiti	Ngaa	Mithun		
ΛZ	Khi	Red	=	777	Khee	Keen		
20	Kan	To carry	-	220	Kann	Hug		
ถาซ	Kom	They	=	૧૧૯૯	Komm	We		
1,⊅	ju	Beg	-	1,99	Joo	Wine		
15	Pong	Meet	-	455	Pongn	Join		
℃	Lam	Way	-	\CC	Lamm	seek/search		
24	Shan	Face	=	244	Shann	Praise		
J [©] Volo	Chuu	Bite	-	ℯ℩	Chu	Melt		

Figure 2. Some minimal pairs in Wancho. From Losu 2013:86–87.

SUBTRACTION

MULTIPLICATION

_			Examples:						
Examples:			(a)	9	×	4	=	10	
(a).	4 - A	_ = }	(b)	۲	×	ਾ ਰ	=	\$ J	
(b).	% - 9	= a	(c)	4	× ·	-a	= -	- 9 <i>J</i>	
(c).	1 2 - 9 1	= -11	(d)	ν	×	J	=	9 4	
(d).	% 0 - 9 4	= 99	(e)	ı	×	0	=	0	
<u>₹34₹4</u> - 7 ₹30	<u>- 2 f 9 l</u>	<u> </u>	(ii) & 4 C	l×-4s9 a×1/a r×(-9;	?	= V		5	
(ii).	<u> 6 – 9 Р Д V</u>	ቴቴቴቴቴ <u>- </u>	(iv) $V 2$ * 1 0 + 0 0 + $V 2 0$ V 2 0	1 9 <u>× 4</u> +1 0 v	+5 4 + 6	+ 1 0 + 1 0 × 3 4 T 1 3) ! <u>)</u> +	9 9 9 0 0 9 9 9 0 0 +9 9 9 9 +9 9 9 9 1 1 1	

Figure 3. Examples of arithmetical operations in Wancho. From Losu 2013:96–97.

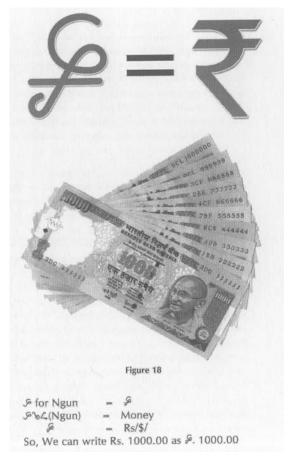


Figure 4. Example of the Wancho ngun sign, used to indicate rupees. From Losu 2013:119.

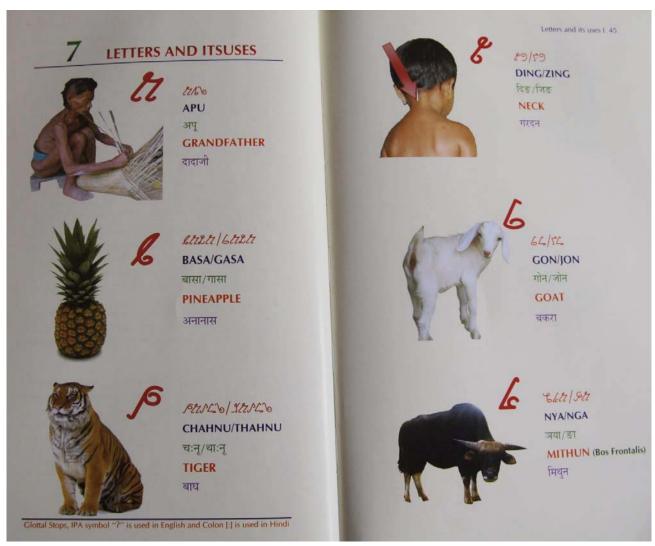


Figure 5. Examples of words beginning the alphabet in Wancho script, Latin script, Devanagari script, with English and Hindi translations. Variant readings like καν chahnu [tʃaʔnù] / Μαν thahnu [θaʔnù] indicate dialect variation. From Losu 2013:44–45.

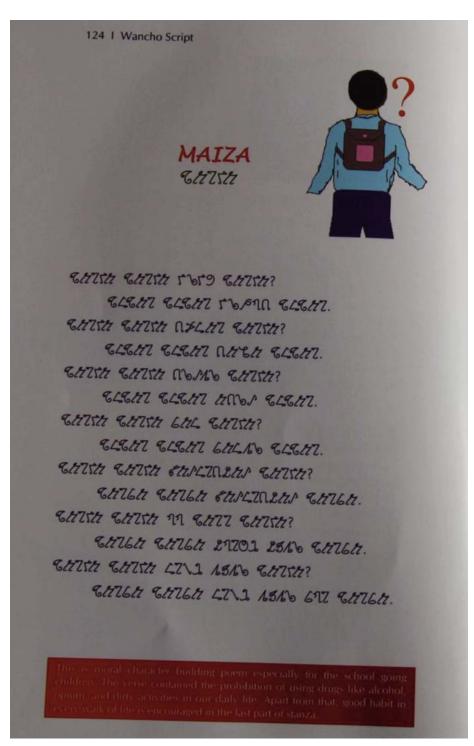


Figure 6. A Wancho poem. From Losu 2013:124.

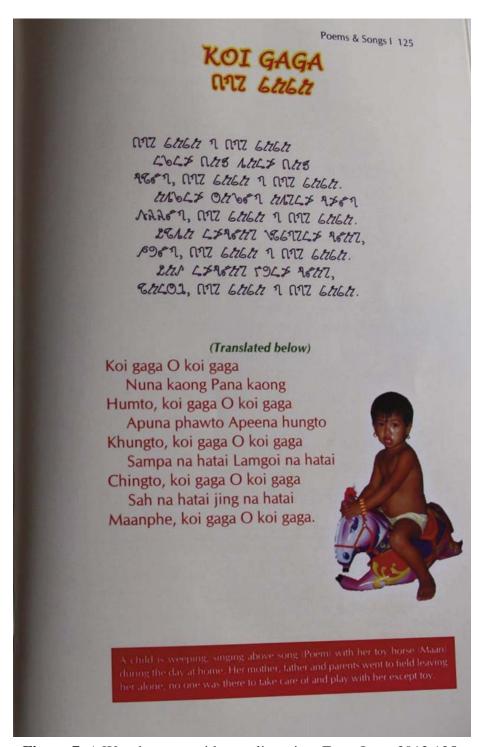


Figure 7. A Wancho song with transliteration. From Losu 2013:125.



Figure 8. A page from one of the Middle School examinations in Wancho.



Figure 9. Students taking an examination in Wancho script.

	1E2C	1E2D	1E2E	1E2F
0	2 7 1E2C0	5.	1E2E0	O 1E2F0
1	L 1E2C1	()	3	1 E2F1
2	5	9 1E2D2	6	9
3	% 1E2C3	1E2D3	9 1E2E3	1 E2F3
4	6 1E2C4	1	λ	<i>J</i>
5	6	1 E2D5	1 E2E5	1E2F5
6	1E2C6	1E2D6	%	P 1E2F6
7	1 E2C7	%	1 E2E7	V
8	 1E2C8	1 E2D8	% 1E2E8	f
9	1 E2C9	1 E2D9	^ 3	4
Α	6 1E2CA	1 1E2DA		1E2FA
В	1 E2CB	7		
С)	JE2DC		
D	L	6		
Е	£ 1E2CD	1E2DD		
	1E2CE	1E2DE		
F	1E2CF	1E2DF		

Letters

1E2C0 & WANCHO LETTER AA 1E2C1 & WANCHO LETTER BA 1E2C2 & WANCHO LETTER CA 1E2C3 & WANCHO LETTER DA 1E2C4 6 WANCHO LETTER GA WANCHO LETTER YA WANCHO LETTER PHA 1E2C7 \ WANCHO LETTER LA 1E2C8 4 WANCHO LETTER NA 1E2C9 16 WANCHO LETTER PA 1E2CA ♂ WANCHO LETTER TA 1E2CB 💃 WANCHO LETTER THA 1E2CC → WANCHO LETTER FA 1E2CD & WANCHO LETTER SA 1E2CE ₺ WANCHO LETTER SHA 1E2CF 5 WANCHO LETTER JA 1E2D0 5 WANCHO LETTER ZA 1E2D1 () WANCHO LETTER WA 1E2D2 🖋 WANCHO LETTER VA 1E2D3 Ω WANCHO LETTER KA 1E2D4 ใ WANCHO LETTER O 1E2D5 ใ WANCHO LETTER AU 1E2D6 ☐ 1E2D7 ℃ WANCHO LETTER RA WANCHO LETTER MA WANCHO LETTER KHA 1E2D9 원 WANCHO LETTER HA 1E2DA 1 1E2DB 7 WANCHO LETTER E 1E2DB WANCHO LETTER I 1E2DC & WANCHO LETTER NGA 1E2DD ∿ WANCHO LETTER U 1E2DE № WANCHO LETTER LLHA 1E2DF Ŕ WANCHO LETTER TSA 1E2E0 🗓 WANCHO LETTER TRA 1E2E1 ಶ WANCHO LETTER ONG 1E2E2 & WANCHO LETTER ANG 1E2E3 9 WANCHO LETTER ING 1E2E4 € WANCHO LETTER ON 1E2E5 7 WANCHO LETTER EN 1E2E6 ≯ WANCHO LETTER AN 1E2E7 ℃ WANCHO LETTER NYA 1E2E8 % WANCHO LETTER UN 1E2E9 ♪ WANCHO LETTER YIH

Digits

1E2F0 O WANCHO DIGIT ZERO 1E2F1 1 WANCHO DIGIT ONE 1E2F2 9 WANCHO DIGIT TWO 1E2F3 Q WANCHO DIGIT THREE 1E2F4 *J* WANCHO DIGIT FOUR 1E2F5 ₺ WANCHO DIGIT FIVE 1E2F6 WANCHO DIGIT SIX 1E2F7 V WANCHO DIGIT SEVEN 1E2F8 { WANCHO DIGIT EIGHT 1E2F9 WANCHO DIGIT NINE

Symbol

Date: 2017-03-07

1E2FA

WANCHO NGUN SIGN
= rupee

→ 20B9
indian rupee sign

A. Administrative

1. Title

Proposal to encode the Wancho script in the UCS

2. Requester's name

UC Berkeley Script Encoding Initiative (Universal Scripts Project)

3. Requester type (Member body/Liaison/Individual contribution)

Liaison contribution.

4. Submission date

2016-03-09

- 5. Requester's reference (if applicable)
- 6. Choose one of the following:

6a. This is a complete proposal

Yes.

6b. More information will be provided later

No.

B. Technical - General

1. Choose one of the following:

1a. This proposal is for a new script (set of characters)

Yes.

1b. Proposed name of script

Wancho.

1c. The proposal is for addition of character(s) to an existing block

No.

1d. Name of the existing block

2. Number of characters in proposal

53.

3. Proposed category (A-Contemporary; B.1-Specialized (small collection); B.2-Specialized (large collection); C-Major extinct; D-Attested extinct; E-Minor extinct; F-Archaic Hieroglyphic or Ideographic; G-Obscure or questionable usage symbols)

Category A.

4a. Is a repertoire including character names provided?

Yes.

4b. If YES, are the names in accordance with the "character naming guidelines" in Annex L of P&P document?

Yes.

4c. Are the character shapes attached in a legible form suitable for review?

Yes.

5a. Who will provide the appropriate computerized font (ordered preference: True Type, or PostScript format) for publishing the standard?

Michael Everson via Banwang Losu

5b. If available now, identify source(s) for the font (include address, e-mail, ftp-site, etc.) and indicate the tools used:

Michael Everson, Fontographer.

6a. Are references (to other character sets, dictionaries, descriptive texts etc.) provided?

Yes.

 $6b. \ Are \ published \ examples \ of \ use \ (such \ as \ samples \ from \ newspapers, magazines, or \ other \ sources) \ of \ proposed \ characters \ attached?$

Yes.

7. 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)?

Yes.

8. 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.

See above.

C. Technical – Justification

1. Has this proposal for addition of character(s) been submitted before? If YES, explain.

Yes. N4785.

2a. Has contact been made to members of the user community (for example: National Body, user groups of the script or characters, other experts, etc.)?

Yes.

2b. If YES, with whom?

Banwang Losu, Stephen Morey

2c. If YES, available relevant documents

3. Information on the user community for the proposed characters (for example: size, demographics, information technology use, or publishing use) is included?

Contemporary use by Wancho speakers.

4a. The context of use for the proposed characters (type of use; common or rare)

Common.

4b. Reference

5a. Are the proposed characters in current use by the user community?

Yes.

5b. If YES, where?

In Arunachal Pradesh.

6a. After giving due considerations to the principles in the P&P document must the proposed characters be entirely in the BMP?

No.

6b. If YES, is a rationale provided?

6c. If YES, reference

7. Should the proposed characters be kept together in a contiguous range (rather than being scattered)?

Yes.

8a. Can any of the proposed characters be considered a presentation form of an existing character or character sequence?

No.

8b. If YES, is a rationale for its inclusion provided?

8c. If YES, reference

9a. Can any of the proposed characters be encoded using a composed character sequence of either existing characters or other proposed characters?

No.

9b. If YES, is a rationale for its inclusion provided?

9c. If YES, reference

10a. Can any of the proposed character(s) be considered to be similar (in appearance or function) to an existing character?

No.

10b. If YES, is a rationale for its inclusion provided?

10c. If YES, reference

11a. Does the proposal include use of combining characters and/or use of composite sequences (see clauses 4.12 and 4.14 in ISO/IEC 10646-1: 2000)?

No.

11b. If YES, is a rationale for such use provided?

11c. If YES, reference

11d. Is a list of composite sequences and their corresponding glyph images (graphic symbols) provided?

No.

11e. If YES, reference

12a. Does the proposal contain characters with any special properties such as control function or similar semantics?

No.

12b. If YES, describe in detail (include attachment if necessary)

13a. Does the proposal contain any Ideographic compatibility character(s)?

No.

13b. If YES, is the equivalent corresponding unified ideographic character(s) identified?