# ISO/IEC JTC1/SC2/WG2 N3273R

L2/07-197R 2007-07-03

Universal Multiple-Octet Coded Character Set International Organization for Standardization Organisation Internationale de Normalisation

Международная организация по стандартизации

**Doc Type: Working Group Document** 

Title: Preliminary proposal for encoding the Imperial Aramaic script in the SMP of the UCS

**Source:** Michael Everson

**Status: Individual Contribution** 

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

Date: 2007-07-03

The Imperial Aramaic script is the head of a rather complex family of scripts. It is named from the use of Aramaic as the language of regional and supraregional correspondance in the Persian Empire though, in fact, the language was in use in this function already before that. The practice continued after the demise of the Persian Empire and was the starting-point for the writing-systems of most of the Middle Iranian languages. Imperial Aramaic has many descendents, including Mongolian and possibly Brahmi. Imperial Aramaic descends from Phoenician script; Early Aramaic has been unified with Phoenician, but Imperial Aramaic as an official script is different enough from Early Aramaic, that the two should not be unified. See N2311 for further discussion.

## **Processing**

Imperial Aramaic is an alphabetic script written right-to-left, in *scriptio continua* or with spaces between words.

## **Punctuation and numbers**

1	•	1 ←	11	17	1 + 10 ←
2	<b>)</b>	2 ←	12	<b>117</b>	2 + 10 ←
3	111	3 ←	13	1117	3 + 10 ←
4	1111	1 + 3 ←	14	11117	1 + 3 + 10 ←
5	11 111	2 + 3 ←	15	רעוע	2 + 3 + 10 <b>←</b>
6	111111	3 + 3 ←	16	רעועוו	$3 + 3 + 10 \leftarrow$
7	1111111	$1 + 3 + 3 \leftarrow$	17	11111117	$1 + 3 + 3 + 10 \leftarrow$
8	11 111 111	$2+3+3 \leftarrow$	18	רעועוע	$2 + 3 + 3 + 10 \leftarrow$
9	111 111 111	$3+3+3 \leftarrow$	19	רעונוועו	$3 + 3 + 3 + 10 \leftarrow$
10	•	10 ←	100	5	100 + 1 ←

20	3	20 ←	200	จบ	100 + 2 ←
30	73	10 + 20 ←	300	ลาท	100 + 3 ←
40	<b>33</b>	20 + 20 ←	400	ลาพ	$100 + 1 + 3 \leftarrow$
50	73	10 + 20 + 20 ←	500	ลบบ	$100 + 2 + 3 \leftarrow$
60	333	20 + 20 + 20 ←	600	จพพ	$100 + 3 + 3 \leftarrow$
70	7333	$10 + 20 + 20 + 20 \leftarrow$	700	ลาพพ	$100 + 1 + 3 + 3 \leftarrow$
80	<i><b>3333</b></i>	$20 + 20 + 20 + 20 \leftarrow$	800	ลบบบบ	$100 + 2 + 3 + 3 \leftarrow$
90	73333	$10 + 20 + 20 + 20 + 20 \leftarrow$	900	จาบาบาบ	$100 + 3 + 3 + 3 \leftarrow$
3000	1111	1000 + 3 ←	30000	<b>হ্রা</b> ))	10000 + 3 ←

## Names and ordering

The names used for the characters here are based on the transliteration given in Driver 1976 and Rosenthal 1995. The order of the characters in the code charts is their alphabetical order.

## **Bibliography**

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Naveh, Joseph. 1987. Early history of the alphabet: an introduction to West Semitic epigraphy and palaeography. Jerusalem: Magnes Press, the Hebrew University. ISBN 965-223-436-2

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Rosenthal, Franz. 1995. A Grammar of Biblical Hebrew. Sixth revised edition. Wiesbaden: Otto Harrassowitz.

Segert, Stanislav. 1975. Altaramäische Grammatik. Leipzig: Veb Verlag Enzyklopaedie.

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## **Unicode Character Properties**

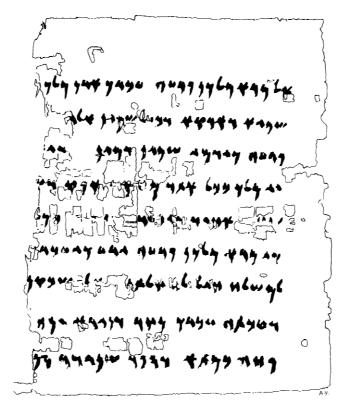
```
10840; IMPERIAL ARAMAIC LETTER ALEPH; Lo; 0; R;;;;; N;;;;;
10841; IMPERIAL ARAMAIC LETTER BETH; Lo; 0; R;;;;; N;;;;;
10842; IMPERIAL ARAMAIC LETTER GIMEL; Lo; 0; R;;;;; N;;;;
10843; IMPERIAL ARAMAIC LETTER DALETH; Lo; 0; R;;;;; N;;;;;
10844; IMPERIAL ARAMAIC LETTER HE; Lo; 0; R;;;;; N;;;;;
10845; IMPERIAL ARAMAIC LETTER WAW; Lo; 0; R;;;;; N;;;;
10846; IMPERIAL ARAMAIC LETTER ZAYIN; Lo; 0; R;;;;; N;;;;;
10847; IMPERIAL ARAMAIC LETTER HETH; Lo; 0; R;;;;; N;;;;;
10848; IMPERIAL ARAMAIC LETTER TETH; Lo; 0; R;;;;; N;;;;;
10849; IMPERIAL ARAMAIC LETTER YODH; Lo; 0; R;;;;; N;;;;
1084A; IMPERIAL ARAMAIC LETTER KAPH; Lo; 0; R;;;;; N;;;;;
1084B; IMPERIAL ARAMAIC LETTER LAMEDH; Lo; 0; R;;;;; N;;;;;
1084C; IMPERIAL ARAMAIC LETTER MEM; Lo; 0; R;;;;; N;;;;
1084D; IMPERIAL ARAMAIC LETTER NUN; Lo; 0; R;;;;; N;;;;;
1084E; IMPERIAL ARAMAIC LETTER SAMEKH; Lo; 0; R;;;;; N;;;;;
1084F; IMPERIAL ARAMAIC LETTER AYIN; Lo; 0; R;;;;; N;;;;;
10850; IMPERIAL ARAMAIC LETTER PE; Lo; 0; R;;;;; N;;;;;
10851; IMPERIAL ARAMAIC LETTER SADHE; Lo; 0; R;;;;; N;;;;;
10852; IMPERIAL ARAMAIC LETTER QOPH; Lo; 0; R;;;;; N;;;;;
10853; IMPERIAL ARAMAIC LETTER RESH; Lo; 0; R;;;;; N;;;;;
10854; IMPERIAL ARAMAIC LETTER SHIN; Lo; 0; R;;;;; N;;;;
10855; IMPERIAL ARAMAIC LETTER TAW; Lo; 0; R;;;;; N;;;;;
10858; IMPERIAL ARAMAIC DIGIT ONE; No; 0; R;;;; 1; N;;;;;
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10859; IMPERIAL ARAMAIC DIGIT TWO; No; 0; R;;;; 2; N;;;;;
1085A; IMPERIAL ARAMAIC DIGIT THREE; No; 0; R;;;; 3; N;;;;
1085B; IMPERIAL ARAMAIC NUMBER TEN; No; 0; R;;;; 10; N;;;;
1085C; IMPERIAL ARAMAIC NUMBER TWENTY; No; 0; R;;;; 20; N;;;;
1085D; IMPERIAL ARAMAIC NUMBER ONE HUNDRED; No; 0; R;;;; 100; N;;;;
1085E; IMPERIAL ARAMAIC NUMBER ONE THOUSAND; No; 0; R;;; 10000; N;;;;
1085F; IMPERIAL ARAMAIC NUMBER TEN THOUSAND; No; 0; R;;; 10000; N;;;;
```

# **Figures**

سود کو مدمه سیام اود می در ال برده و می در ال برده و برده

**Figure 1.** Petition to the governer of Judah from Elephantine, given in Naveh 1987.



**Figure 2.** Letter of Adon found at Saggarah in Egypt, given in Naveh 1987.

## ARAMÄISCH.

Monum.	Papyrus	Babylon.	Wert	Monum.	Papyrus	Babylon.	Wert	Monum.	Papyrus	Babylon.	Wert
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4	ל צ	4 7	b	71	<b>ل</b> ا	ר ב	y		ημ	ry	s
λ	1	41	g	74	74	ታሃኃ	k	पृष	ע ע	74	q
4	47	47	d	66	45	35	1	4	44	47	r
λЛ	1	ជាក	h	44 45	<del>ከ</del> ን	םמצ	$\mid$ m	٧	<b>V</b> V	Λħ	š
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ኳዘክ	н	hн	X.	U	y	ענג	: ₃a				

Die aramäische Schrift findet man sowohl neben der Keilschrift wie selbstständig in Inschriften und auf Papyrus, in Assyrien und in Ägypten. Die hier mit "Babylonisch" bezeichneten Buchstaben sind den Inschriften entnommen, welche Layard bei seinen Ausgrabungen auf 8 irdenen Schüsseln fand.

Figure 3. Table of Imperial Aramaic alphabets, from Faulmann 1880.

## THE IRANIAN ALPHABETS.

	ARAMEAN.			PEHLEVI.				INDO- BACTRIAN.	ARMENIAN. (Reversed.)	GEORGIAN.	
	ARA	ARAMEAN.		ARSACIDAN. SASSANIAN. PARSI		PARSI.	BACT	ARME (Reve	GEOR		
	SATRA- PIES & EGYPT.	PAL- MYRA.	Coins & Gems,	Haji- abad B.	Haji- abad A.	Coins.	MS.	Kapur- di-giri,	Oldest MSS.	Oldes: MSS.	
	Sec. iv. & iii, B.C.	Sec. ii.	Sec. i, & ii, A.D.	Sec. iii	Sec. iii.	Sec. iv. to vi.	Modern	Sec iii.	Sec. ix.	Sec. x:	
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1	1	7	17	27	2	1	>	7	U	ተ	f
1	1	4		44	ر ا ا	<b>_</b>	2	У	٤	4	٠
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Figure 4. Table of Iranian alphabets, from Taylor 1883, showing Imperial Aramaic in column I.

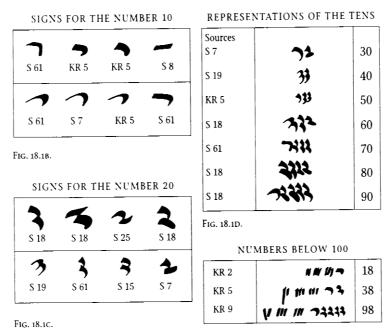
# Alphabels.

Hebrew	Mæšai	Aramaic papyri	Palmyr. inscrip- tions	Nabat inscrip- tions, Sinai	Parthian inscrip- tions	Persian inscrip- tions	Psalter	Book Pahlavi	Trans- liter- ation
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**Figure 5.** Table of Iranian alphabets, from Nyberg 1964. The Aramaic papyri column refers to Imperial Aramaic.

Sources		
S 18	1	1
S 61	11	2
S 8	11/	3
S 19	1 111	4
S 61	1' 111	5
S 19	VII 111	6
S 61	1 11/11/	7
CIS. II <sup>1</sup> 147	1/ 1// 1//	8
S 62	jii 111 111	9

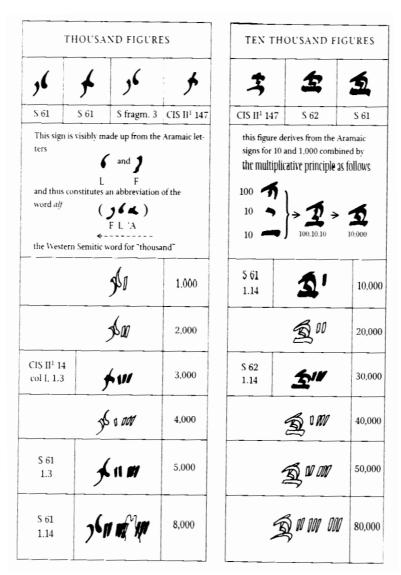
**Figure 6.** Table of Aramaic figures for the numbers 1 to 9, copied from Sachau 1911, abbreviated as S, from fifth century BCE papyri from Elephantine. Taken from Ifrah 2000.



**Figure 7.** Table of Aramaic figures for the numbers 10 to 90, from fifth century BCE papyri from Elephantine. Taken from Ifrah 2000.

M'IN	500	S 19	51	100
100 × 5			100 × 1	
TH W/// 100×8	800	S fragm. 3	<b>5</b> in 100 × 2	200
<b>*&gt;            </b> 100×9	900	S 19	100×4	400
	** \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	100 × 5  *** *** *** 800  100 × 8  *** *** 900	100 × 5  **Y ***   800   S   fragm. 3  ***   900   S 19	100 × 5  100 × 1  **Y V//// 100 × 8  800 S fragm. 3  100 × 2  **J//////////////////////////////////

**Figure 8.** Table of Aramaic figures for the 100s attested in fifth century BCE papyri from Elephantine. Taken from Ifrah 2000.



**Figure 9.** Table of Aramaic figures for the 1000s. Forms attested in fifth century BCE papyri from Elephantine are given in black. Taken from Ifrah 2000.

## **Row 108: IMPERIAL ARAMAIC**

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0	*	)
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8	G	•
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С	ر اع	3
D	5	n
E	>	X
F	v	<b>Q</b>

hex	Name
40 41 42 43 44 45 46 47 48 48 44 45 55 55 55 55 55 55 55 55 55 55 55	IMPERIAL ARAMAIC LETTER BETH IMPERIAL ARAMAIC LETTER GIMEL IMPERIAL ARAMAIC LETTER DALETH IMPERIAL ARAMAIC LETTER HE IMPERIAL ARAMAIC LETTER HE IMPERIAL ARAMAIC LETTER WAW IMPERIAL ARAMAIC LETTER WAW IMPERIAL ARAMAIC LETTER TETH IMPERIAL ARAMAIC LETTER TETH IMPERIAL ARAMAIC LETTER TODH IMPERIAL ARAMAIC LETTER YODH IMPERIAL ARAMAIC LETTER AWN IMPERIAL ARAMAIC LETTER AWN IMPERIAL ARAMAIC LETTER SWE IMPERIAL ARAMAIC LETTER SWE IMPERIAL ARAMAIC LETTER AYIN IMPERIAL ARAMAIC LETTER AYIN IMPERIAL ARAMAIC LETTER SODHE IMPERIAL ARAMAIC LETTER SODHE IMPERIAL ARAMAIC LETTER SODHE IMPERIAL ARAMAIC LETTER SODH IMPERIAL ARAMAIC LETTER TAW (This position shall not be used) (This position shall not be used) (This position shall not be used) (IMPERIAL ARAMAIC DIGIT TWO IMPERIAL ARAMAIC DIGIT TWO IMPERIAL ARAMAIC DIGIT THREE IMPERIAL ARAMAIC NUMBER TEN THOUSAND

#### A. Administrative

1. Title

Preliminary proposal for encoding the Imperial Aramaic script in the SMP of the UCS2.

Requester's name

**Michael Everson** 

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

#### Individual contribution.

4. Submission date

#### 2007-07-03

- 5. Requester's reference (if applicable)
- 6. Choose one of the following:
- 6a. This is a complete proposal

No.

6b. More information will be provided later

Yes.

## 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

#### Imperial Aramaic.

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

30.

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 C.

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.** 

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. 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 Unicode Character Database http://www.unicode.org/Public/UNIDATA/UnicodeCharacterDatabase.html and associated Unicode Technical Reports for information needed for consideration by the Unicode Technical Committee for inclusion in the Unicode Standard.

See above.

### C. Technical – Justification

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

No.

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.)?

No.

2b. If YES, with whom?

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?

Semiticists and other scholars.

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

#### Historical use.

4b. Reference

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

#### Yes.

5b. If YES, where?

#### Scholarly publications.

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?

#### NI.

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?

#### Nο

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?

#### Nο

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?