Panel Observations Peter Tytell's Analysis of Typestyle Issues

The following is a summary of the information provided to the Panel by Peter Tytell relating to the typestyle of the four documents aired on the September 8 Segment (the "Killian documents") and the typestyle of the previously released Texas Air National Guard ("TexANG") document containing a superscript "th" that was featured on the September 10 *CBS Evening News* (the "Superscript Exemplar").[1]

Tytell concluded, for the reasons described below, that (i) the relevant portion of the Superscript Exemplar was produced on an Olympia manual typewriter, (ii) the Killian documents were not produced on an Olympia manual typewriter, and (iii) the Killian documents were produced on a computer in Times New Roman typestyle. Tytell acknowledged that deterioration in the Killian documents from the copying and downloading process made the comparison of typestyles "to some extent a subjective call." However, he believed the differences were sufficiently significant to conclude that the Killian documents were not produced on a typewriter in the early 1970s and therefore were not authentic.

I. Tytell's Qualifications

Tytell is a forensic document examiner based in New York City, who is known in particular for his familiarity with typewriters. He has been a document examiner for over 30 years and comes from a family of typewriter experts that owned a typewriter repair shop in New York and a related document investigation service for many years. Tytell informed the Panel that he has been involved in over 100 court proceedings as an expert consultant, both within the United States and abroad, and has testified as an expert witness in many of those proceedings on behalf of law enforcement agencies and private clients.

According to the resume that he provided to the Panel, Tytell is a diplomate of the American Board of Forensic Document Examiners, a member of the American Society of Questioned Document Examiners, a member of the Questioned Document section of the American Academy of Forensic Sciences, and the current Vice-Chairman of the Questioned Documents Subcommittee of the American Academy of Testing and Materials' Committee on

---

[1] The Superscript Exemplar is attached as **Attachment A**. The superscript "th" is located in the portion of the document that is circled.

Forensic Sciences. He studied the examination of documents under his parents, Pearl and Martin Tytell, both of whom had been licensed by the University of the State of New York to teach Questioned Document Examination and Identification.

Tytell has taken courses in document analysis and related subjects at Georgetown University's Institute of Advanced Analytical Chemistry and Georgetown University's Institute for Criminal Law and Procedure; Rensselaer Polytechnic Institute; the Institute of Paper Chemistry; Rochester Institute of Technology; and John Jay College of Criminal Justice. In addition, he has participated in over 40 specialized workshops, seminars and courses relating to document examination techniques and has himself presented over 50 papers and lectures on typewriter identification and other document examination subjects at the numerous professional meetings that he attends on a regular basis.

Tytell appears to be well regarded within the document examination field, particularly with respect to typewriter issues. In 2000, Andy Rooney interviewed Tytell for a CBS *Sunday Morning* story about typewriters and the closing of the Tytell family typewriter shop. During that interview, Rooney referred to Tytell as a "famous typewriter detective." By all indications, Tytell has built up an impressive collection of typewriters and related parts and manuals. A November 1997 Atlantic Monthly article described the Tytell family typewriter shop as "mostly floor-to-ceiling shelves of typewriters in cases or wrapped in plastic sheets, boxes of typewriter parts past numbering" and, according to Tytell's father, "the largest collection of foreign type in the world." According to published reports, even though the repair shop ceased operations several years ago, Tytell still maintains many of those machines, parts and manuals for the document examination business that he operates on the same premises.

II. Tytell Believes That The Relevant Portion Of The Superscript Exemplar Was Produced On An Olympia Manual Typewriter

The September 10 *CBS Evening News* featured a report in which Dan Rather referred to a previously released TexANG document from 1968 that contains a superscript "th" in the text. See **Attachment A**. Tytell told the Panel that he watched the broadcast that evening and determined "within 5 seconds" that the superscript "th" on the Superscript Exemplar had been produced by an Olympia manual typewriter, and that it was materially different from the superscript "th" on the May 4, 1972 Killian document that had been shown on the September 8 Segment. The "th" on the Superscript Exemplar did not rise above the adjacent number and was

underlined, while the superscript "th" in the May 4, 1972 Killian document rose well above the adjacent number and was not underlined. The May 4, 1972 Killian document is Exhibit 2B to the Panel's Report.

Tytell provided the Panel with a typestyle "strikeup" chart that he created using an Olympia SG3 manual typewriter with Elite 87 typeface.[2] He also provided the Panel with a separate chart that he created to compare various portions of the Superscript Exemplar with corresponding passages of the Superscript Exemplar that he created using the Olympia manual typewriter.[3] Tytell explained to the Panel that, as shown on the comparison chart (**Attachment C**), the Olympia manual typestyle appears to match the typestyle used on those portions of the Superscript Exemplar (including the line containing the superscript "th").[4] Tytell also explained to the Panel that the Olympia manual typewriter was the only typewriter available in the early 1970s that he knows of that had the superscript "th" key as a standard feature. He provided the Panel with a copy of the Olympia manual keyboard layout;[5] the "th" key is on the right hand side. See **Attachment D**. For all of the foregoing reasons, Tytell concluded that the "th" on the Superscript Exemplar was produced using an Olympia manual typewriter.

III. The Killian Documents Were Not Produced On An Olympia Manual Typewriter

Tytell also concluded that the Killian documents were not produced on an Olympia manual typewriter. Tytell explained to the Panel that the Olympia manual typewriter available in the early 1970s did not have proportional spacing and therefore could not have produced the proportional spacing that appears in the Killian documents. In addition, Tytell explained that the superscript "th" key on the standard keyboard of the Olympia manual typewriter of that era

---

[2] A copy of this strikeup chart is attached as **Attachment B**. Tytell indicated to the Panel that although he used an Olympia manual typewriter manufactured in 1975 to create the strikeup chart, he does not believe that the distinctive Olympia typestyle changed much between the early 1970s and 1975.

[3] A copy of this "Comparison of Service Record with Olympia Elite 87" chart is attached as **Attachment C**.

[4] Tytell informed that Panel that certain entries on the Superscript Exemplar below the line that contains the superscript "th" were produced by other typewriters.

[5] A copy of the Olympia manual keyboard layout is attached as **Attachment D**.

produced a different "th" symbol (underlined and not elevated above the preceding number) than the superscript "th" symbol in the May 4, 1972 Killian document (not underlined and elevated above the preceding number).

Tytell acknowledged to the Panel that one could attempt to add a superscript "th" key to an Olympia electric typewriter of that era (which had proportional spacing) by soldering certain pieces together and realigning the carriage. However, he stated that this procedure would involve multiple steps and that achieving proper alignment would be very difficult.

In addition, Tytell concluded that the typestyle on the Killian documents is noticeably different from the typestyle produced by the Olympia manual typewriter. This can be seen, for example, by comparing the numbers 3, 4 and 7 from the header of the August 1, 1972 Killian document with the distinctive Olympia typestyle for those same numbers as shown in **Attachment B**. For all of the foregoing reasons, Tytell concluded that the Killian documents were not produced on an Olympia manual typewriter.

IV. The Killian Documents Were Likely Produced On A Computer

Tytell concluded that the Killian documents were produced in a typestyle that closely resembles Times New Roman, a typestyle that he explained was not available on standard typewriters in the early 1970s.[6] Tytell explained to the Panel that although the typestyle of the Killian documents has certain similarities with the "Press Roman" typestyle on the IBM Selectric Composer typewriter that was available in the early 1970s, there are enough significant differences in his opinion to conclude that the Killian documents were not produced by an IBM Selectric Composer. The basis for his conclusion is summarized below.

According to Tytell, the Killian documents are proportionally spaced and therefore could not have been produced by monospaced typewriters, which constituted a substantial majority of the typewriters available in the early 1970s. In addition, Tytell explained that the Killian documents are produced in serif typestyle (i.e., "with feet"). This is visible, for example, on the capital "M" from the May 4, 1972 Killian document. Therefore, he was able to eliminate all "sans-serif" proportional typestyles. Tytell also reviewed the June 2004 version of the Haas

---

[6] Tytell explained to the Panel that Times New Roman was available at that time only on typesetting and other machines used in the commercial production of books and newspapers.

Atlas, which he described as a compendium of available typewriter typestyles that he considers a key resource in examining typography issues. Tytell told the Panel that he reviewed the proportionally spaced, serif typestyles in the Haas Atlas and did not find a single match with the Killian documents.[7]

Tytell explained to the Panel that IBM, for example, had 18 different proportional spacing typestyles available during the 1971-1972 period for the IBM Selectric line.[8] Tytell created a chart of these "IBM Proportional Spacing Typestyles" and also created a separate chart of the most significant "Typographic Features" of the Killian documents, including the "M," "W," "G," "4," "5" and "th" characters.[9] Based on a comparison of the significant typographic features in the Killian documents against the available IBM Selectric proportional spacing typestyles, Tytell concluded that none of the IBM Selectric typestyles is a match to the typestyle in the Killian documents.[10] For example, he determined that none of the IBM Selectric typestyles matched the distinctive features of the capital "M", capital "W", and "5" from the Killian documents.

Based on the foregoing, Tytell focused his analysis on whether the Killian documents could have been produced by the IBM Selectric Composer, a high-end "golf-ball" machine with proportional spacing that was available in the early 1970s and was used mostly by printers.[11]

---

[7] Tytell explained to the Panel that the IBM Selectric Composer typestyle is not listed in the Haas Atlas because the Selectric Composer had certain attributes of a word processing system.

[8] Tytell informed the Panel that the IBM Selectric line included both monospaced and proportionally spaced (or "Executive") "golf-ball" typewriters that were popular in the office market during the early 1970s. These machines were distinct from the IBM Selectric Composer machine that is discussed in more detail below.

[9] The "IBM Proportional Spacing Typestyles" chart is attached as **Attachment E**. The "Typographic Features" chart is attached as **Attachment F**.

[10] Tytell also concluded that the available typestyles on the IBM Model C Executive and Model D Executive typewriters, which were "typebar" machines with proportional spacing that also were used in the early 1970s, did not match the typestyle on the Killian documents.

[11] Tytell told the Panel that he focused on that particular typestyle question because several of his colleagues in the document examination field had stated publicly during the Aftermath that the IBM Selectric Composer might have been able to create the documents in question, since it had proportional spacing.

Tytell provided the Panel with a chart that he created to show those IBM Selectric Composer typestyles that in his view were the "closest" to the typestyle used in the Killian documents.[12] With respect to these typestyles, he explained to the Panel that the Baskerville, Aldine Roman and Journal Roman typestyles have a "J" that drops below the baseline of the other letters and therefore is inconsistent with the typeface on the Killian documents. He also stated that "Press Roman" comes the "closest" of the IBM Selectric Composer typestyles to the typestyles used on the Killian documents, but explained that there are differences noticeable to a trained eye in the opening of the "G," the width of the "H," "M" and "W" and the length of the leg on the "R."

Tytell also provided the Panel with a "Typestyle Differentiation" chart that he created to illustrate that the Killian documents appear to have been produced in Times New Roman and could not have been produced on the IBM Selectric Composer typewriter.[13] The chart compares the capital "M", the capital "W" and the capital "G" as it appears in: (a) Times New Roman typestyle from Microsoft Word; (b) an IBM Selectric Composer "Press Roman" typestyle from the 1973-1974 IBM catalog; and (c) the May 4, 1972 Killian document. The chart illustrates that the width of the capital "M" and capital "W" is similar in the Times New Roman and Killian document typestyles, and much narrower in the IBM Selectric Composer typestyle. The chart also illustrates that the opening in the capital "G" is similar in Times New Roman and the Killian documents, and much wider in the IBM Selectric Composer typestyle.

The chart also compares the "/" symbol as it appears in: (a) Times New Roman typestyle from Microsoft Word; (b) an IBM Selectric Composer "Press Roman" typestyle from the 1973-1974 IBM catalog; and (c) the August 1, 1972 Killian document. The chart illustrates that the "/" symbol is similar in the Times New Roman and Killian document typestyles and is longer and has a steeper angle in the IBM Selectric Composer typestyle.[14]

---

[12] A copy of this chart, which also includes the Times New Roman typestyle from Microsoft Word, is attached as **Attachment G**.

[13] A copy of this "Typestyle Differentiation" chart is attached as **Attachment H**. It is similar to a chart that Tytell forwarded to Yvonne Miller of *60 Minutes Wednesday* on Saturday, September 11, a copy of which is attached as **Attachment I**. The chart forwarded to Yvonne Miller did not contain the analysis of the capital "W".

[14] Tytell informed the Panel that his comparison charts were created at a 3x magnification level and, in his professional opinion, provided sufficient clarity to make this determination.

Tytell also explained to the Panel that none of the available IBM Selectric Composer typestyles had the superscript "th" character as a standard feature. In addition, he stated that none of those IBM Selectric Composer typestyles except for one had the "#" character that is used in the May 4, 1972 Killian document.[15] He also indicated to the Panel that it would have been possible but "highly inconvenient" for a TexANG office to have welded both a superscript "th" key and a "#" key onto the IBM Selectric Composer machine. In addition, he explained to the Panel that in his opinion a typical TexANG office was unlikely to have had an IBM Selectric Composer in the early 1970s because the machines were very expensive, difficult to use and designed primarily for the commercial production of books, newspapers and other printed material. For all of the foregoing reasons, Tytell concluded that the Killian documents were probably not produced on an IBM Selectric Composer.

As explained above, Tytell concluded that the Killian documents appear to have been produced in Times New Roman typestyle. He explained to the Panel that, according to his research, Times New Roman was designed in 1931 for the *Times of London* newspaper and became commercially available in 1933. However, he told the Panel that Times New Roman was only available on typesetting and other non-tabletop machines until the desktop publishing revolution in the 1980s. Therefore, he concluded that Times New Roman could not have been available on a typewriter in the early 1970s and the Killian documents must have been produced on a computer. [16]

V. Tytell's Conclusion

In summary, Tytell concluded that the Killian documents were generated on a computer. He does not believe that any manual or electric typewriter of the early 1970s could have

---

[15] Tytell explained that the one possible exception (Copperplate Gothic) was a billing typestyle only available in capital letters that does not resemble the typestyle used in the Killian documents.

[16] Tytell concluded that the Killian documents were generated on a computer by eliminating the IBM Selectric Composer and other typewriters available the early 1970s as the source of the documents because of typestyle differences. Although his reasoning seems credible and persuasive, the Panel does not know for certain whether Tytell has accounted for all alternative typestyles that might have been available on typewriters during that era.

produced the typeface used in the Killian documents. He believes the IBM Selectric Composer "Press Roman" typestyle is very close to the typestyle used in the Killian documents but has noticeable differences. In addition, he told the Panel that the IBM Selectric Composer did not have the ability to produce the superscript "th" and the "#" symbol as a standard feature, and he believes it would have been unlikely for a TexANG office to have had those features customized on the machine. Therefore, he doubts the authenticity of the Killian documents because in his opinion they could only have been produced on a computer in Times New Roman typestyle that would not have been available in the early 1970s.

LAST NAME	FIRST NAME	MI	AFSN	GRADE	PLACE OF BIRTH	DATE OF LAST OER	
BUSH,	GEORGE	W.	FG3244754	1st Lt 73APR30	New Haven, Conn.	73 Apr 30	2

CHRONOLOGICAL LISTING OF SERVICE

EDOA	MAFSC	BRIEF DESCRIPTION OF DUTY—ORGANIZATION AND STATION
27May68	to 3Sep68	Enl, HG Amn, [redacted] Apr Adm Spec, RES (TexANG)
4Sep68	0006	Pilot Trainee, 111th Fighter Interceptor Squadron, Ellington AFB, Texas (TexANG)
26Nov68	0006	Stu Plt Tng, P-[redacted]A-A, 3[redacted]0 Stu Sq, Moody AFB, Ga. (ATC)
		Total AD/ACDUTRA [redacted] 26 May 69: 2d Lt, 226 days
69Dec29	0006	Pilot Trainee, 111th Fighter Interceptor Squadron, Ellington AFB, Texas (TexANG)
70 Jun 20	1125D	Pilot, Ftr Intcp, 111th Ftr Intcp Sq, Ellington AFB, Tx (TexANG)
		Total AD/ACDUTRA as of 70 May 26: 2d Lt 313 days
		Total AD/ACDUTRA as of 71 May 26: 2d Lt - 43 days, 1st Lt - 3 days
		Unit redesignated 111th Ftr Intcp Sq (Trng)
		Total AD/ACDUTRA as of 72 May 26: 1st Lt 22 days
1 Oct 73		HD TR TexANG Per ANGR 36-05, SO ANG-A 158, State of Texas AG Dept, Austin, Tx, and transferred to ARPC (ORS), 3800 York St, Denver, CO 80205 effective 2 October 1973. (DOS TexANG 1 Oct 73).

9. COMBAT REPORT	10. REMARKS
	Previous Service Numbers: AF26230638
	Selective Service Number: 41-62-46-1480
	Reserve Status Expires:: 26 May 74 Code: AA
	Civ Occupation: Students Since:
	Appointed 1st Lt, USAF ANG: 4 [illegible]
	Unif. Maint. Allw. Entitlement: 72 Nov 25 Last Paid: 68 Nov 25
	Next Payment Due: 72 Nov 25
	Last Physical: [illegible] Class: 3
	TAFMS: 19/15 [illegible]
	TAFCS: 15/05 [illegible]

Attachment A

Attachment B

Olympia SG3 # 7-3442726 Office Manual Elite 87 8,5 motion

! " # $ % _ & ' ( ) * +
1 2 3 4 5 6 7 8 9 0 - =

Q W E R T Y U I O P ¼ °
q w e r t y u i o p ½ ¾

A S D F G H J K L : @ ¥
a s d f g h j k l ; ¢ ~

Z X C V B N M , . ?
z x c v b n m , . /

Also has w i d e s p a c i n g f e a t u r e

BUSH, GEORGE W. FG3244754 New Haven, Conn.

27May68 to 3Sep68-Enl, HG Amn, Prin Dy Apr Adm Spec, RES (TexANG)

4Sep68 0006 Pilot Trainee, 111th Fighter Interceptor Squadron, Ellington AFB, Texas (TexANG)

AF26230638 41-62-46-1480 26 May 74 AA

Peter V. Tytell
October 19, 2004

COMPARISON OF SERVICE RECORD WITH OLYMPIA ELITE 87

Service Record	BUSH, GEORGE W.	FG3244754	New Haven, Conn.
Olympia Elite 87	BUSH, GEORGE W.	FG3244754	New Haven, Conn.

Service Record	27May68 to 3Sep68-Enl, HG Amn, Prin Dy Apr Adm Spec, RES (TexANG)
Olympia Elite 87	27May68 to 3Sep68-Enl, HG Amn, Prin Dy Apr Adm Spec, RES (TexANG)

Service Record	4Sep68 0006 Pilot Trainee, 111th Fighter Interceptor Squadron, Ellington AFB, Texas (TexANG)
Olympia Elite 87	4Sep68 0006 Pilot Trainee, 111th Fighter Interceptor Squadron, Ellington AFB, Texas (TexANG)

Service Record	AF26230638	41-62-46-1480	26 May 74
Olympia Elite 87	AF26230638	41-62-46-1480	26 May 74

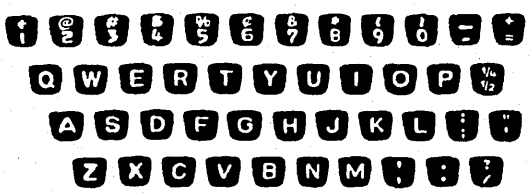
Attachment C

Attachment D

Standard Americar Keyboards

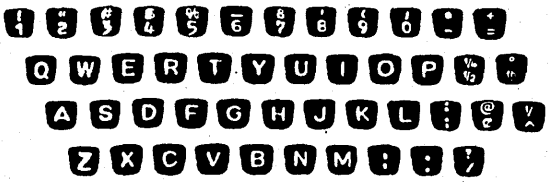
The Olympia Electric and Portable typewriters are equipped with 44 keys. Olympia Manual typewriters all have 46 keys. Illustrated below are the standard American keyboards supplied with our various models:

Olympia Electrics No.657

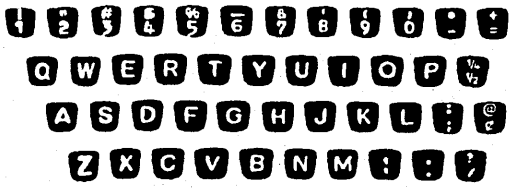


Note: Gray keys indicate repeat action keys on electric models

Olympia Manuals No.723



Olympia Portables No.723



OLYMPIA USA INC

Box 22, Somerville, N.J. 08876
Tel. (201) 722-7000 Telex (710) 480-9272

IBM Proportional Spacing Typestyles

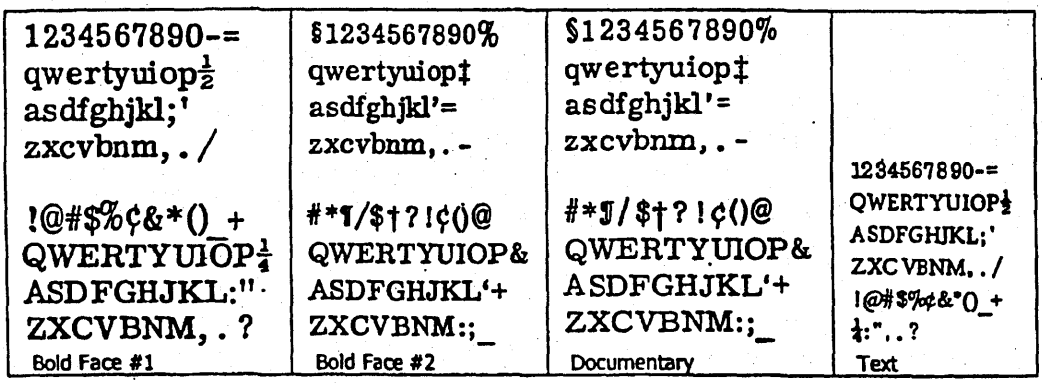
§1234567890% qwertyuiop‡ asdfghjkl'= zxcvbnm,.- #*¶/$†?!¢()@ QWERTYUIOP& ASDFGHJKL'+ ZXCVBNM:;_ Registry	§1234567890% qwertyuiop‡ asdfghjkl'= zxcvbnm,.- #*¶/$†?!¢()@ QWERTYUIOP& ASDFGHJKL'+ ZXCVBNM:;_ Directory	1234567890 QWERTYUIOP* ASDFGHJKL?$ ZXCVBNM.+- 1234567890 QWERTYUIOP* ASDFGHJKL?$ ZXCVBNM.+- Copperplate Gothic #1	1234567890 QWERTYUIOP* ASDFGHJKL?$ ZXCVBNM.+- 1234567890 QWERTYUIOP* ASDFGHJKL?$ ZXCVBNM.+- Copperplate Gothic #2

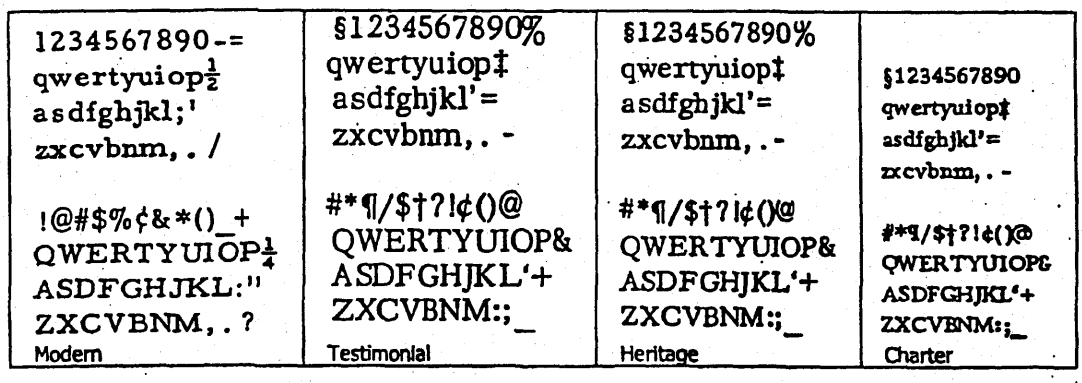
1234567890-= qwertyuiop½ asdfghjkl;' zxcvbnm,./ !@#$%¢&*()_+ QWERTYUIOP¼ ASDFGHJKL:" ZXCVBNM,.? Mid-Century	1234567890-= qwertyuiop½ asdfghjkl;' zxcvbnm,./ !@#$%¢&*()_+ QWERTYUIOP¼ ASDFGHJKL:" ZXCVBNM,.? Doric

§1234567890% qwertyuiop‡ asdfghjkl' = zxcvbnm,. - #*¶/$†?!¢()@ QWERTYUIOP& ASDFGHJKL'+ ZXCVBNM:;_ Secretarial	§1234567890% qwertyuiop‡ asdfghjkl'= zxcvbnm,.- #*¶/$†?!¢()@ QWERTYUIOP& ASDFGHJKL'+ ZXCVBNM:;_ Arcadia

§234567890-= *qwertyuiop1* *asdfghjkl;'* *zxcvbnm,./* *¶@#$%¢&*()_+* *QWERTYUIOP!* *ASDFGHJKL:"* *ZXCVBNM,.?* Bold Face Italic	234567890-= qwertyuiop1 asdfghjkl;' zxcvbnm,./ @#$%¢&*()_+ QWERTYUIOP! ASDFGHJKL:" ZXCVBNM,.? Patron

IBM Proportional Spacing Typestyles





TYPOGRAPHIC FEATURES

Feature	*Character*	*04 May 1972*	*01 August 1972*	*18 August 1973*
Full center (to base line)	M	Mey May AFM MEMORANDUM	MEMORANDUM	
Leg ends beyond bowl with smooth terminal	R	FOR JERRY	FOR RE Recom JERRY	OETR
High center with join point at middle	W	W. LAW	W. LAW	
Small opening	G	George	George FG LANG Gp	Grp Grp
Closed top No foot	4	34567 77034 04 14	34567 77034 .3244754 147 147 4.	
Slanted back	5	34567 [redacted] 35-13	34567 .3244754 35-13.	
Superscript	111th 187th	111th		187th

Attachment F

IBM Selectric Composer

Baskerville

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890$.,-‘’:;!?*½¼¾—()[]=†/+%&@

Aldine Roman

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890$.,-‘’:;!?*½¼¾—()[]=†/+%&@

Journal Roman

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890$.,-‘’:;!?*½¼¾—()[]=†/+%&@

Press Roman

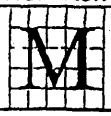
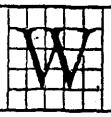
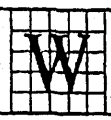
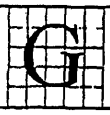
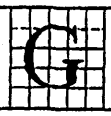
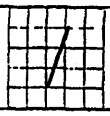
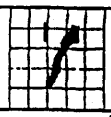
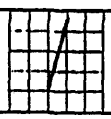
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890$.,-‘’:;!?*½¼¾—()[]=†/+%&@

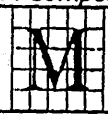
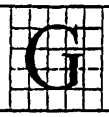
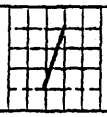
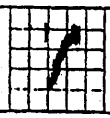
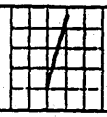
Computer

Times New Roman, 11 pt

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890$.,-‘’:;!?*½¼¾—()[]=§/+%&@

TYPESTYLE DIFFERENTIATION

Source	Times New Roman	Memo	IBM Composer
Memo dated 04 May 1972			
	M	04 May 1972	M
Memo dated 04 May 1972			
	W	George W. Bush,	W
Memo dated 04 May 1972			
	G	George W. Bush,	G
Memo dated 01 August 1972			
	/	USAF/TexANG	/

Source	Times New Roman	Memo	IBM Composer
Memo dated 04 May 1972			
	M	04 May 1972	M
Memo dated 04 May 1972			
	G	George W. Bush,	G
Memo dated 01 August 1972			
	/	USAF/TexANG	/