DECIPHERING THE RAMEY MEMO

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ABSTRACT: During the first week in July, 1947, something fell to Earth near the tiny New Mexican town of Corona and was retrieved by members of the 509th Bomb Group of the U.S. Army Air Forces stationed near Roswell, New Mexico. Limited documentation about that event has been found and much of that submitted for examination lacks any sort of provenance. One of the few examples of such a document can be seen in the hand of Brigadier General Roger Ramey, at the time the commanding officer of the 8th Air Force. The date of the photograph has been established by various records, including those from the Bettmann Photo Archives which once held two of the negatives. It is dated July 8, 1947 and was transmitted over the INS wire service at 11:59 p.m. In that photograph Ramey is holding a piece of paper slightly turned away from the camera but on which some words can be read while others seem to be obscured. Using modern techniques and computer equipment, some of the key phrases have been identified and in research conducted in April 2015, attempts were made to decipher the rest.

On July 8, 1947, First Lieutenant Walter Haut, Public Affairs Officer of the 509th Bomb Group provided the four media outlets in Roswell, two newspapers and two radio stations, with a press release announcing they had recovered a flying disc. Major Jesse Marcel, Sr., the Air Intelligence Officer of the 509th Bomb Group, was credited with the recovery, and he was dispatched to the Fort Worth Army Air Field with some of the debris that had been found. At that point, in terms of media coverage, the story shifted to Fort Worth, and General Roger Ramey, the commanding officer of the 8th Air Force.

At the offices of the *Fort Worth Star* – Telegram, J. Bond Johnson, described as a photographer/reporter, was sent to Ramey's office. Johnson was briefed by his editor, Cullen Green and told that there was something that had been found and was being taken to Ramey's office (Randle, 2000). At the airfield,

Johnson entered Ramey's office and saw debris, identified as the remains of a neoprene rubber weather balloon and a Rawin radar reflector scattered on the floor (Berlitz and Moore, 1980; Friedman and Berliner, 1992; Johnson, 1947; Randle and Schmitt, 1991). He took six photographs of the material: two of Marcel, two of Ramey, and two of Ramey and his Chief of Staff, Colonel Thomas Dubose. In four of those photographs, Ramey held a piece of paper and in one of them it is turned toward the camera so that some of the text can been seen.

The paper is not directly facing the camera but enlargements revealed that some of the words could be read. Brad Sparks obtained a blowup and made an attempt to read the memo in 1980. He saw the word "BALLOONS." (Pflock, 2001, Sparks 2004). In 1985, Sparks was able to pick out a few another words that are "unanimously or almost unanimously agreed-upon as being there ("weather balloons", "Fort Worth, Tex.", "disc"). (Pflock, 2001, Rudiak 2015, Sparks 2004). In the mid-1980s Barry Greenwood made attempt to read anything on the memo. (Sparks, 2015) In 1991, Don Schmitt, who had been working with Randle, sent a copy of the photograph to Dr. Richard Haines, a former NASA scientist, asking if he could read anything on the paper. Using a microscope, he scanned the photograph. He reported that he could see vague words but that he couldn't make out individual letters. Haines (1991) thought that a better quality enlargement might reveal more of the message.

The next serious attempt to read the message seems to have been made by the Air Force during their investigation into the Roswell crash. According to the Air Force:

Additionally, the researchers obtained from the Archives of the University of Texas – Arlington (UTA), a set of original (i.e., first generation) prints of the photographs taken at the time by the *Fort Worth Star – Telegram*, that depicted Ramey and Marcel with the wreckage. A close review of these photos (and a set of first – generation negatives also subsequently obtained from UTA) revealed several interesting observations... It was also noted that in the two photos of Ramey he had a piece of paper in his hand [though the critical picture is one of Ramey and Dubose]. In one it

¹ Although originally identified as General Ramey's aide, the Unit History of the Eighth Air Force and the Fort Worth Army Air Field identified Dubose as the Chief of Staff, a far more responsible position than a simple aide.

² Analysis of the photographs available at the University of Texas – Arlington Special Collections and copies of the photographs published in numerous books and online.

was folded over so nothing could be seen. In the second, however, there appears to be text printed on the paper. In an attempt to read this text to determine if it could shed any further light on locating documents relating to this matter, the photo was sent to a national – level organization for digitizing and subsequent photo interpretation and analysis.³ (Weaver 2013) This organization was also asked to scrutinize the digitized photos for any indication of flowered tape (or "hieroglyphics," depending on the point of view) that were reputed to be visible to some of the persons who observed the wreckage prior to it getting to fort Worth. This organization reported on July 20, 1994, that even after digitizing, the photos were of insufficient quality to visualize either of the details sought for analysis... (Weaver and McAndrew, 1995, p. 29 – 30.)

That was where the matter rested until 1998 when J. Bond Johnson, who had taken six of the seven photographs in General Ramey's office,⁴ including the one in which the message might be seen, decided to investigate further (Randle, 2000, p. 294). Johnson put together a team to inspect the photographs that included Ron Regehr, a space and satellite engineer (Johnson, 1998). Using a huge enlargement of the photograph, a computer and a variety of software and camera equipment, they were able to read more of the message that Ramey held. Or rather, they claimed that they could read it with some degree of certainty.

In the upper left-hand corner, they saw what they believed to be the image of a telephone and concluded that Ramey was holding a "telephone message sheet" because of this "telephone logo." They then claimed to have "positively identified a number of words in the message. There were, quite naturally, gaps in what they could see, and noted that the message had been typed in all capital letters.

Their interpretation of the message was:

³ The organization that examined the memo was the National Photographic Interpretation Center, which is part of the CIA. The NPIC evolved into the National Geospatial-Intelligence Agency, NGA.

⁴ Analysis of the composition of the photographs seems to corroborate this, but Johnson would claim that he had only taken the pictures of Ramey and Ramey and Dubose. He said that he didn't know who had taken the two pictures of Marcel. This statement by Johnson seems to be in error.

AS THE... 4 HRS THE VICTIMS OF THE... AT FORT WORTH, TEX... THE "CRASH" STORY... FOR 0984 ACKNOWLEDGES... EMERGENCY POWERS ARE NEEDED SITE TWO SW OF MAGDALENA, NMEX... SAFE TALK... FOR MEANING OF STORY AND MISSION... WEATHER BALLOONS SENT ON THE... AND LAND... rOVER CREWS... [SIGNED]... TEMPLE. (Johnson, 1998).

If what they found was accurate, and others could corroborate what they had seen, then it was a breakthrough on the Roswell case. Here was a document with an indisputable provenance. General Ramey was holding it in his hand, and copies of the photograph put out over the INS wire provided a time and a date (Randle, 2000; Randle and Schmitt, 1994; Randle and Schmitt, 1991).

Further Analyses of the Ramey Memo

Others began to request copies of the pictures from the Special Collections held at the University of Texas at Arlington Library. They brought their expertise to bear on the message in Ramey's hand. To the delight of many, they could also see letters and images as suggested by first by Sparks and then by Johnson and his team. The problem was that many of those doing the work were not seeing the same things.

For example, the telephone logo that Johnson's team saw looked more like a smudge on the paper than anything else. One researcher said that the telephone looked more like the Liberty Bell as seen on the back of a Franklin half dollar. It was, as Russ Estes described it, "Faces in the clouds."

Neil Morris, a technician who works for the University of Manchester in England, began to work on the message as part of the team created by Johnson. His interpretation of the symbols did not agree exactly with that made by other components of Johnson's team. He did do one thing that was beneficial and that was breakdown the message line by line so that it would be easy to follow his interpretation. He used capital letters to represent the parts of the message of which he was sure, lower case letters to represent his best guess of some letters, an asterisk to denote a letter he couldn't decipher, and a dash where there was little more than a smudge on the message.

Morris' interpretation of the message was:

It was not an exact match for what Johnson had released and in fact, went off at a couple of new angles. In the new version, while the word "victims" remains, as does the Fort Worth, Texas, nearly everything else is different. One of the major points in the Johnson version was the wording that suggested, "Emergency Powers are needed Site Two SW of Magdalena, Nmex." It suggests that those interpreting the message were seeing, to some extent, exactly what they wanted to see.

John Kirby, a researcher who is interested in the Roswell case, and who worked for a huge company in the computer field, also looked at the message. Using his expertise and equipment, he was unable to see much of anything. He did agree that the third line were the words, "At Fort Worth, Tex." The second line, which many consider the critical line, said, "…are the remains of the material you commanded we fly (Kirby, 1999)."

In still a different version, David Rudiak suggested only a little of what others had seen. According to him, and using the same mix of capitals for what he was sure of and lower case for what he suspected, he reported the message read:

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(1) ------ officer
(2) -----(jul)y 4th the VictIMs of tHE weECK you fOrWArdEd TO The
(3) ------EaM At FORT WORTH, TEX.
(4) ------5 pM THE "DISC" they will ship [swap?] FOR A3 8th Arrived.
(5) ----or 58t(h) bom(be)r sq(?) Assit [Assess] offices? AT ROSwe(ll) AS for
(6) ---54th SAID MIStaken------[meaning? weather? balloon?] of [is] story And said
(7) news [clip, chat, dirt] out is OF WEATHER BALLOONS which were
(8)----- Add[And, Ask] land d--------[dirt cover?] crews.
(9)
(10) rAMEy
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Those weren't, of course, the only interpretation that was made. Russ Estes, using a 16 x 20 print made by the University of Texas Library, applied his expertise to the examination. Estes, a professional documentarian was able to use a professional quality video camera to capture the image. Then using his huge computer and a variety of software programs, he examined the message every way that he could think of including a jeweler's loupe, magnifying glass and microscope. He said that he could see nothing that he would be willing to swear to in a court (Estes, 1998). He said there was simply nothing there to see.

Pressed on the point, he did say that he could make a "best guess" about the images on the message. Looking at an 8 x 10 enlargement of the message area, using the same techniques, he could see with a limited amount of confidence, "Fort Work, Tex." On the line below that where one group saw "Disk" and another saw, "ELSE," Estes (1998) believed he saw, "ELA*". He did say that it made no sense to him, just that was what the ambiguous smudges that everyone was attempting to make into words looked like to him.

As for the signature block, he could see nothing that resembled either of the claims. At best, there might have been an "M" in the middle of the word, and the possibility of an "LE" at the end. That gave the nod to "Temple" but Estes said it was more "Faces in the clouds."

Schmitt, Tom Carey and Don Burleson⁵ came up with their own interpretations of the memo. Burleson, writing in the January 7, 2000, issue of *Vision*, a monthly magazine published by the *Roswell Daily Record*, wrote, "A number of attempts have been made to read the Ramey letter. Quite frankly, most of these attempts are amateurish, and even some ufologists have concluded that there is nothing in the Ramey image that advances the case for the Roswell incident. They are MISTAKEN. (Burleson, 2000; Randle, 2000.)

Burleson stated that he had spent a year working on deciphering the Ramey memo. He claimed that he had the advantage of being the director of a computer lab with a background in cryptanalysis. According to him, "I'm quite used to reading things that I wasn't meant to read (Burleson, 2000.)"

⁵ Schmitt and Carey were working together on one interpretation while Burleson, although in communication with them, was working on his own.

Burleson wrote that he had been using several excellent computer image enhancement software packages, "including LUCIS, the most advanced software used today is such fields as microscopy (Burleson, 2000)." It should be noted that the Ramey memo is not an encrypted message but a plain text message that is obscured by the distance to and the angle of the camera.

Interestingly, the interpretation of the memo, as given by Burleson, and credited to Schmitt and Carey, does not agree with what Carey himself had written. In a publicly posted email dated March 29, 2000, Carey said that the "take" on the Ramey memo is that of Carey and Schmitt and not "Burlson [sic] or anyone else... All of us continue to work on the memo as best we can, so there will be no doubt be more to say in the future (Carey, 2000)."

Estes pointed out, as did others, that the message was a teletype rather than something from a typewriter. Given that, the message would have had to be in all capital letters because many of the teletype machines had no capability for lower case letters.

Stan Friedman contacted Rob Belyea, the owner of ProLab, to examine high resolution scans made of the negative. Friedman paid someone to take the negative from the Special Collections and have a computer lab make the scans. Belyea said that he couldn't spend hours examining the message but that he could rule out or confirm the interpretations made by others by using his software to decide on character count and combinations of letters (Dull, 1998). It was not at all unlike the work being done by Russ Estes.

While Friedman stood on the sidelines watching and not commenting on the research, Belyea did say that he could not see "Magdalena" in the text. He did say, "They're pulling off all sorts of [readings], but they're making some of it up (Dull, 1998)."

Estes had said much the same thing but much more eloquently when he suggested it was "Faces in the clouds." He added, "Sorry, but I just can't see any of these things."

There is an additional problem, only partially addressed in the search of the message. This was a military message sent to a military installation which means there would have been some military jargon in it. The attempts at reading it have failed to account for any military jargon. The closest is Rudiak's

⁶ In should be noted that Burleson wrote those words more than a decade and a half ago. While the programs were, at that time, the most advanced, they have been superseded by other, more powerful programs and means of analysis today.

attempt to place military unit designations into the message. Rudiak noted that what he thought as "5 PM" made no sense because the military would have used the twenty-four hour clock and it would have said, "1700 Hrs" rather than "5 PM. (Rudiak, 2000)." That is a valid point.

What it boils down to is that there is no consensus on what the message says, the best way to review it, or what to do next. One researcher said that it had to be assumed that the message had something to do with the Roswell case, but there really is no reason to make that assumption. The message could be about almost anything and the words and images being seen might be a reflection of what the researcher wants to see rather than what is actually there.

Another researcher suggested that the word "victims" as it appears in the message is the critical word. To him, it "jumped off the page." The problem is that those looking at the message do not see it as a universal. One man said that he thought it was "remains." Estes noted that it seemed to be a mix of upper and lower case letters with those doing the viewing seeing what they wanted to see. To Estes the first letter looked more like a "P" than a "V". He noted that there seemed to be a lower case "I" in the word, and that the last letter looked more like an italic "5" than it did an "S".

There are those who suggested that the original negative should have been used rather than a photographic print, but the truth is, the negative had been handled so much that it had acquired a bit of dirt and debris. The scan of the negative did not clarify the message to any great extent. In the end, it was an attempt to read letters and words that were sometimes vague to the point of being little more than dark smudges. The message was read in the light of interpretation of the person doing the reading and his or her belief of what it should say.

There is a final complication with the Ramey memo. Johnson, according to some, claimed that he had handed the message to Ramey (Balthaser, 2001a). That confuses the source of the document that Ramey is holding suggesting that Johnson brought the document into the office. Johnson said that he had received it at the newspaper office, which suggests that it was one of the teletype messages that had been sent to the newspaper over the news wire that said debris was being sent to Fort Worth from Roswell (Balthaser, 2001a). If the

⁷ Those who made the new, high resolution scans in 2015 had requested permission to clean the negative, assuring those at the University of Texas – Arlington that no damage would be caused. That permission was denied, but upon examination of the negative, it was decided that a cleaning would not have improved the overall quality of the scans.

document Ramey is holding was provided as a prop as Johnson said, then it could relate to the Roswell crash but would be from a civilian source. It would do nothing to establish the extraterrestrial nature of the event. However, when Johnson was challenged on this point, he then changed his mind and said that he had not brought the teletype message into Ramey's office. The events have undergone an evolution from the first interviews conducted in 1989 (Houran and Randle, 2002; Randle, 2000; Schmitt and Randle, 1991; Shandera and Moore, 1990).

Greenwood made additional attempts to read part of the memo. He argued that the format of the memo was more closely matched those of newspaper teletype messages than it did a document created by the military (Greenwood, 2004). Looking at the various words and phrases that are easily read, and for which there is consensus, Greenwood wrote that it more closely matched that transmitted over news wires that it did military teletype communications. He did note that Johnson had said that he had brought the document into Ramey's office and handed it to him, which would mean that it was a news wire teletype rather than a military one. Johnson, however, soon retracted the claim. (Balthaser, 2001b, Sparks, 2004).

Greenwood noted that in some of the phrases in which there was general agreement, were also comment to news reports published at the same time. The phrase, "AT FORT WORTH, TEX," appeared in newspapers just that way. The *Nevada State Journal* on July 9, 1947, said, "...the commanding general of the 8th air force at Fort Worth, Tex." (Greenwood, 2004). To Greenwood this seemed to be additional evidence that Ramey was holding a copy of the newspaper teletype handed him by Johnson rather than a classified message that had been delivered to his office.

There was another aspect to this. Greenwood argued that the phrasing in the memo was important. Nearly all military teletype messages of the era did not use punctuation marks but rather wrote out them as "CMA" (comma) and PD (period). He wrote, "The most significant difference is that while newspapers used civilian time formats (AM, PM), the military used "Zulu, " or universal 24-hour time for their endings." (Greenwood, 2004, Randle, 2000).

In 2009 Greenwood began another examination of the Ramey Memo. Once again he was able to see "AT FORT WORTH, TEX." In the next line, he saw the term, "The 'DISC" which also agreed with the consensus. It was in the next line down that he made the important change. He noticed that the letters, "GHT"

seemed to stand out. Most of those attempting to read the memo interpreted this to be the end of "SOUGHT." (Morris, 1998). Greenwood wrote:

Having previously read clips in between pondering the photo [Ramey memo], I went back and flipped through it again. There was a press clip from the San Mateo CA *Times* of July 8th. Late edition papers for the 8th had carried the breaking Roswell debris news. Reading down the clip I saw this: "Lt. Warren Haught, public information officer at Roswell said..." And the quote continued to his press release. "HAUGHT" stood out like a sore thumb. It was a six-letter word with a "GHT" ending in an article related to Roswell....

In the Ramey document [Greenwood's name for the memo], we don't see the word "Warren" clearly in the text. But... I've determined that the area before "HAUGHT" is a six-letter word and, based on the use of the word, "HAUGHT" in the press coverage, "WARREN" is the most likely fit in that area. (Greenwood, 2009).

Greenwood's interpretation was not well received by others who attempted to read the memo. His suggestion that it was a newspaper teletype was rejected by other researchers such as Brad Sparks. He noted that in a review of military messages from the era, the showed that contrary to Greenwood, the use of periods and commas rather than abbreviations for them were sometimes found in military teletype messages (Sparks, 2004).

Sparks suggested that the memo might be a "general to general" message which is sometimes referred to as a "back channel." These would be more informal than official communications between commands and were often signed with the originating officer's name rather than the normal date/time group. (Sparks, 2004).

The argument made by Sparks was that the memo was not a civilian teletype message brought to Ramey by *Star-Telegram* reporter Bond Johnson. It was, in fact, a military memo and that it referred to the events that had transpired outside of Roswell. All this demonstrates just how convoluted the attempts to read the memo have become.

Although it had been argued that the memo might not be relevant, Carey has said that the message must refer to the Roswell case because Ramey is holding it while Johnson was in his office to interview and photograph him about the find near Roswell (Carey, 1998). Sparks reinforced this idea by examining the

words in the message and suggesting that the "the disc," "Roswell, NMEX," and "weather balloons," are evidence that the message does refer to the events there (Sparks, 2004). It could be suggested, however, that the words and images being reported by various researchers might be a reflection of what that researcher wanted to see rather than what was actually seen on the document (Houran and Randle, 2002).

Testing for Priming in Reading the Ramey Memo

Give that observation James Houran, was interested in researching the variables that guided those interpretations of what was an obviously ambiguous stimuli (e.g. Houran, 1997, 2000; Houran and Williams, 1998, Lange and Houran, 1998, 1999b; Randle, 1999). The Ramey memo is ambiguous and it seems clear that the bias of the researchers has crept into their analyses. If the document could be more easily interpreted, then this would be a simple task with a consensus of its contents but as demonstrated, even those who have spent months and years in their research do not agree in their interpretations (Houran and Randle, 2002).

They constructed an experiment to test this hypothesis. They performed three related studies in which three groups of self-selected participants were asked to decipher the Ramey memo. The participants were given one of three possible scenarios: that the memo dealt with the Roswell UFO crash; that it dealt with the testing of an atomic bomb or they were told nothing about the contents. The expectation was that each condition would elicit significant differences in the participants' interpretations (Houran and Randle, 2002). They were also interested to see if there was significant agreement in the identity of words in the same locations, regardless of the suggested condition (Houran and Randle, 2002).

The participants studied the memo believing that it had something to do with the Roswell crash for an average of twenty minutes. Those who had been told it was about an atomic bomb averaged sixteen minutes and those who had been told nothing spent fourteen minutes (Houran and Randle, 2002). There were some words seen across all three test conditions. These included "Fort Worth TEX," "Story" and "Balloons" (Houran and Randle, 2002). Interestingly, those told the memo was about atomic testing reported seeing "Glasses, Morning, Flash, Atomic, Laboratory, and Land" (Houran and Randle, 2002). Those who

were given no information only saw "Fort Worth, TEX, Flew, Story, and Balloons" (Houran and Randle, 2002).

In the discussion section of the paper prepared for the *Journal of Scientific Exploration*, Houran and Randle (2002) wrote:

The surprisingly high agreement between our participants and previous investigators on specific words in identical locations in the Ramey memo suggests that some of the document is indeed legible, even without computer enhancement. However, the meaning or context of those words remains ambiguous because the degree of interpretation of the document is strongly influenced by suggestion effects and the interpreter's cognitive style. We are inclined to believe that such effects have also tainted the previous studies on the memo using sophisticated software because there appears to be weak interpreter reliability among the earlier analysts.

There were suggestions for a new study of the negative and attempts to read the memo. According to Houran and Randle (2002):

First, to be methodologically consistent we recommend that standardized computer enhancement be used on the best raw data that we have using comparable software programs. Analysis should be conducted by at least three independent and blind laboratories that specialized in the area of reading and transcribing archival documents. Their only motivation should be payment for providing professional and objective reports. The laboratories could be provided all available scans of the document... With this triangulation approach, we can reasonably estimate the inter-rater reliability (and hence validity) of the resulting interpretations (i.e., do the laboratories show statistically significant agreement on specific words in precise locations in the text)...

There are problems with these ideas. First, there is not adequate funding for such a project. These laboratories are expensive and the analyses would be expensive. Given the situation, it is nearly impossible to find the money to pay the labs or supply the various documents needed.

Secondly, and more importantly, it is nearly impossible to ensure that the labs would not know what was being asked. The Internet contains the information and a search would not require much time or effort. As the analysis was being

arranged for this study, the participants were provided with no information about the source of the document, only that it was a photograph that required scrutiny. They discovered the source of the photograph and nearly severed relations with members of the team.

The Newest Analysis

The research on the Ramey stagnated for a number of years. The scans used for attempted readings had not been upgraded as the technology improved, and no one had examined the negative in that time. One man approached a number of experts in photographic enhancement to ask for advice. It was recommended to:

...inspect and re-image the original film negative using a mix of modern analog & digital recording techniques using a digital biological microscope; high-resolution recording film and micro & marco lenses onto a modern digital camera sensor. I sought advice from Mr. J. Morelock in Memphis [TN] USA for his earlier pioneering research work & experience in the development of color micro-film.

There [University of Texas at Arlington], with the assistance of Library Staff and under strict conditions of access and handling of the original film & print materials, work as described commenced on the 21st of April 2015. (Schollum, 2015).

Methodology:

The aim of a direct inspection & re-recording of the negative was to:

- Establish physical condition of the negative/s
- Establish definition, resolution and clarity of target
- Provide a viewing environment for direct reading of text
- Distinguish film base + Fog versus image density/s

- Define silver particles forming individual character-forms
- Identify silver particles (bleed) not forming individual character forms (font letters) (to be sculpted away from character forms to enhance readability)
- Identify recurring characters among lines of text (aid to readability)
- Identify any 'recurring flaws' or mechanical 'signatures' among fonts (aid to integrity & readability)
- Determine which details are candidates for enhancement

The dual purpose for re-inspecting the negative was to estimate the extent, or whether at all, sufficient information exists in the original to warrant further analysis and if so, to develop a methodology seeking to apply proven imaging practices to render better images of the text.

Visual inspection of film negatives disclosed signs of normal and robust handling in the form of (minor) chemical stains, dust particles and scratches consistent with the age & handling these negatives have been subjected to.

Observations and Conditions of the Negative

The densities of the emulsion layers appeared well 'fixed' and readable with no significant damage or degradation of the area of text (memo) forming the purpose of the examination.

These materials are in professional curatorship at the University of Texas at Arlington Special Collections and their longevity assured in their current location. Observable damage to the negatives is consistent both with their age and use prior to being preserved by the Special Collections Library. In particular, the time pressures and techniques of newspaper photographers often required less than optimal processing & drying times before being printed to meet short publication deadlines. Damage consistent with this practice is present.

Exposure levels of the film recorded by flash were adequate and no subject or camera shake evident. The camera was well focused on critical parts of the

scene and the 'memo' within the focus zone set by the photographer and diaphragm.

With these negatives in relatively good condition, well exposed and processed and professionally preserved - the problem of whether the text can be read is one mainly of scale. The height & width of any font relative to the size and distribution of the silver halides on the film is the main determinant of whether individual letter forms can be identified and contribute to a full or partial reading of the memo.

For purposes of illustration, the digital file dimensions for the full frame 4x5 negative printed above is 3663.05 by 2743.05 pixels. Whereas the message length is a mere 148.5 pixels wide.

To image the memo in isolation, a Nikon SMZ1500 biological microscope ably operated by a talented Graduate Student at Arlington's School of Engineering was used to view and digitally record aspects of the 'memo' negative.

The magnification factor of the microscope gave better insights into the granular distribution of halides comprising letter forms. Unfortunately the resolution of the images was less than ideal and full copies of original images and enhanced versions are attached.

Negatives were then examined and recorded using the Special Collections digital microfiche system. David Rudiak with assistance of Library staff took a series of image recordings with bracketed exposures and raw & enhanced copies of these files are attached.

Original negatives were imaged using a Canon digital camera with both a macro and micro lens in Canon's proprietary format. I then recorded negatives using a Canon film camera with both a macro and micro lens onto ultra-high resolution Kodak recording film.

Exposures (film & digital) were bracketed and copies of raw and enhanced versions of these files are attached. Films have been sent to Wellington, New Zealand for processing using Kodak proprietary.

Method & Results:

Images from microscope; microfiche and digital camera have been processed into groups of RAW & enhanced files. High Dynamic Range photography has been used to harness the range of tones present with negatives and in particular the 'memo'.

The products of HDR imaging have been processed into working files in the form of image stacks where the interaction among pixels among layers has been influenced variously to:

- a) Reduce the visual interference of film grain within the emulsion impinging on the character forms (fonts)
- b) Separate out the tones of the paper base from the fonts used in the memo to suppress background interference
- c) To isolate and ('lift') tonal values of the fonts away from the background in order to render character forms more clearly.

Resulting files provide a range of image states ranging from low contrast grey tones to contrasty separated tones for interpretive evaluation.

(Please note: pixel destructive approaches using curves or levels has not been used).

Direct examination of the negative rather than viewing positive generations has allowed a clearer picture of the grain structure down to a focused molecular level. No further increase in visual readability can be achieved. Any additional interpretation of the target message will more than likely be left to the application of adequate search algorithms to differentiate between the type fonts and message background.

Conclusions

Recommendations for Further Study

An interesting parallel developed in the first months of 2015. Two Kodachrome slides taken in the same time frame as the photograph of General Ramey were discovered years earlier. The slides were color and showed what many thought might be the body of an alien creature. In that photograph there was some sort

of placard that was angled away from the camera and that held a legend that was almost legible.

During the three years of the investigation into the Roswell Slides, there were several attempts to read that placard. In the Mexico City presentation held on May 5, 2015, Donald Schmitt reinforced the claim that the slides had been subjected to rigorous testing by experts in the field of photography. According to the newspaper accounts from Mexico City, "Exhaustive investigations by other photographic and medical experts have concluded that the photos are genuine. The experts list presented at the Mexico City event include Dr. David Rudiak, an expert in photographic analysis, Dr. Donald Burleson, a specialist in computer enhancement; Ray Downing, materials expert from the Studio MacBeth, New York; Col Jeffrey Thau associated with the Pentagon's Photo Interpretation Department, and Prof Rod Slemmons, a former Director of the Chicago Museum of Contemporary Photography.

Parts of the statement, however, were not exactly accurate. David Rudiak is not an expert in photographic analysis, but has experience in attempting to read the Ramey Memo as noted. Because of that, he was asked to look at the placard near the body but was unable to unscramble or deblur the image.

Colonel Jeffrey Thau is a retired Air Force officer who once had offices at both Wright-Patterson Air Force Base and the Pentagon. The Photo Interpretation Department had been moved from the Pentagon to Fort Meade, Maryland. Their expertise was not in attempting to read messages that were obscured but in interpreting photo intelligence of various kinds including ground based military facilities and movements. It seems that this failed attempt to read the placard wasn't actually an attempt by the experts at the Pentagon or Fort Meade, but friends seeing if they could make out anything on the placard as a favor to Colonel Thau.

Adam Dew posted to his web site, in the hours after the presentation in Mexico City, a higher quality scan of one of the slides and a number of different people around the world downloaded it, beginning to work to deblur the placard. Within forty-eight hours of the presentation, these independent researchers had been able to read the placard. The first line said, "Mummified body of a two year old boy."

Although some of the words were still obscured, the rest of the placard added details that confirmed the first line. According to Curt Collins at Blue Blurry Lines, the placard said:

MUMMIFIED BODY OF TWO YEAR OLD BOY

At the time of burial the body was clothed in a xxx-xxx cotton shirt. Burial wrappings consisted of these small cotton blankets.

Loaned by the Mr. Xxxxxx, San Francisco, California

Tony Bragalia confirmed the words on the placard, and identified the location in which the photograph had been taken. He wrote:

Working with a colleague from Europe and with the text of the deblurred placard, I discovered... that this interpretation of the text was correct. Found in the September 1938 Volume VIII, Number 1 *Mesa Verde Notes* that was published by the National Park Service was an article that definitively solves the mystery of the "Roswell Slides." In paragraph four of the section of the publication entitled *Around The Mesa* was found this:

A splendid mummy was received by the Park Museum recently when Mr. S.L. Palmer Jr. of San Francisco returned one that his father had taken from the ruins in 1894. The mummy is that of a two year old boy and is in an excellent state of preservation. At the time of burial the body was clad in a slip-over cotton shirt and three small cotton blankets. Fragments of these are still on the mummy.

The deblurring process was not available when most of the work had been done on the memo. With these programs in wide spread use, the high resolution scans of the Ramey Memo made from the original negative should be made available to those who can duplicate the process. Given that, it will be possible for the work done to be enhanced, replicated and confirmed.

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