The Huntington Library, Art Collections & Botanical Gardens
Proposal to the National Historic Publications and Records Commission

Decoding the Civil War: Engaging the Public with 19th Century Technology &
Cryptography through Crowdsourcing and Online Educational Modules

Project Summary

1.   **Purposes and Goals of the Project** The American Civil War is perpetually fascinating to many members of the public. The goal of this project is to use the transcription and decoding of Civil War telegrams to engage new and younger audiences using crowdsourcing technology to spark their curiosity and develop new critical thinking skills. The transcription and decoding will contribute to national research as each participant will become a "citizen historian" or "citizen archivist." Thus the project provides a model for long-term informal and formal education programs and curricula as it can be used even after the transcription and decoding is completed as a teaching model for students in inquiry-based learning.

The Huntington Library respectfully requests a two-year grant from the National Historic Publications and Records Commission (NHPRC) to provide partial funding for a consortium project that draws together the expertise of four different organizations—The Huntington Library, the Abraham Lincoln Presidential Library and Museum, North Carolina State University, and, through the University of Minnesota, Zooniverse.org (a non-profit devoted to citizen science)— each bringing unique expertise to a collaboration among libraries, museums, social studies education departments, and software developers with the following goals: **1)** Engage new and younger audiences by enlisting their service as "citizen archivists" to accelerate digitization and online access to a rare collection of approximately 16,000 Civil War telegrams called The Thomas T. Eckert Papers at The Huntington Library. **2)** Build digital literacy, critical thinking skills and research proficiency in informal and formal education environments by developing educational modules with activities that can be used for many years by classroom teachers and museum educators.

The purposes of the project are to 1) Provide open source access to a large, rare collection of 15,922 Civil War telegrams that are owned by The Huntington Library by digitizing all the telegrams and code books; **2)** Develop a crowdsourcing website with Zooniverse to utilize "citizen archivists" to decode and decipher the 15,922 telegrams with greater efficiency and accuracy than could be done by staff at participating institutions; and **3)** Design a decoding activity that is connected to Civil War milestones and provide inquiry-based educational modules that can be used to bring history alive to museum-goers and classroom students.

This collaborative project exemplifies the goals of the *NHPRC's Literacy and Engagement with Historical Records* **grant category**: **1)** It develops partnerships among several institutions to provide educational opportunities for students and the general public; **2)** The process of transcribing and decoding the telegrams builds users' digital literacy skills and development of educational modules will "enhance public understanding of and access to historical records." **3)** Participants are contributing to research by transcribing and decoding the telegrams on an open source platform (Zooniverse), where they are available to a wider audience.

2.   <u>**Plan of Work for the Grant Period**</u>   The plan of work begins with The Huntington Library digitizing this rare collection of telegrams, which have, until recently, been privately held and thus never available to the public. Concurrently, the team will begin working with Zooniverse to develop, test, and project launch the "citizen archivist" website to crowdsource the transcription process more efficiently and quickly than could be done by The Huntington. The crowdsourcing provides the added benefit of reaching a larger audience than can be reached by typical museums, with over 400 academic, museum and library partners and over 1.3 million volunteer users. The Education Division of The Huntington will work with John K. Lee, a consultant with extensive experience in developing online education modules about Lincoln, to develop, pilot and test ten educational

modules through rigorous evaluation and then provide them through a dedicated website to teachers, museums and the general public.

3. **Products and /or Publications to be completed during the Grant Period**

- Zooniverse crowdsourcing website to facilitate the efficient transcription of 16000 historic telegrams

- Ten teaching modules and a website to provide open source access

- Long-term digital preservation of the nearly 14,000 master TIFF files and accompanying metadata and transcriptions of the Eckert Collection of telegrams

4. **Names, E-Mail Address and Phone Numbers of the Project Director and Key Personnel**

- Project Director: Mario Einaudi, the Kemble Digital Projects Librarian, The Huntington Library; meinaudi@huntington.org (626-405-2284)

- Project Administrator: Robin D. Gibbin, Director of Corporate, Foundation, and Government Relations, The Huntington Library; rgibbin@huntington.org (626 -405-3484)

5. **Performance Objectives**—The major outcome of this project will be to engage broad audiences, likely up to tens of thousands of "citizen historians", with telegrams from the American Civil War. In addition, through the development of the education modules and Huntington's partnerships with the Torres High School and the Pasadena Unified School District, the educational modules will be integrated into teacher workshops reaching over 1000 teachers of at-risk students. Finally, these materials will be of use and openly available to scholars interested in telegraphy, cryptography, communications during wartime, technology, civilian-military relations, and many other aspects of the Civil War or American history more generally. Perhaps the most meaningful outcome is that the collaborative will provide the transcription for and public access to historical records that have not been seen by the public in a format that would allow them to be understood and appreciated, and we believe will add to their understanding of the Civil War.

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Project Narrative

Over one hundred and fifty years have passed since the end of the Civil War and it still captures the imagination and passion of young and old. We propose that the Civil War offers a compelling and fascinating subject with which to engage and vastly improve the public's, and in particular K-12 students', relationship to history, historical records and the processes of research.

1) Purposes and Goals of the Project

The Huntington Library respectfully requests a two-year grant from the National Historic Publications and Records Commission (NHPRC) to provide partial funding for a consortium project that draws together the expertise of four different organizations—The Huntington Library, the Abraham Lincoln Presidential Library and Museum, North Carolina State University, and, through the University of Minnesota, Zooniverse.org (a non-profit devoted to citizen science)—each bringing unique expertise to a collaboration among libraries, museums, social studies education departments, and software developers with the following **goals**:

- Engage new and younger audiences by enlisting their service as "citizen archivists" to accelerate digitization and online access to a rare collection of approximately 16,000 Civil War telegrams called The Thomas T. Eckert Papers at The Huntington Library.

- Build digital literacy, critical thinking skills and research proficiency in informal and formal education environments by developing educational modules with activities that can be used for many years by classroom teachers and museum educators.

The purposes of the project are to

- Provide open source access to a large, rare collection of 15,922 Civil War telegrams that are owned by The Huntington Library by digitizing all the telegrams and code books.

- Develop a crowdsourcing website with Zooniverse to utilize "citizen archivists" to decode and decipher the 15,922 telegrams with greater efficiency and accuracy than could be done by staff at participating institutions.

- Design a decoding activity that is connected to Civil War milestones and provide inquiry-based educational modules that can be used to bring history alive to museum-goers and classroom students.

Meeting the NHPRC's goals for Literacy and Engagement with Historic Records

The major outcome of this project will be to engage broad audiences with telegrams from the American Civil War. Telegrams in the Civil War provided a brief, rapid form of communication (a communication method that modern youth, who communicate through text messages and tweets, may find somewhat familiar in form). Additionally, encoded telegrams are riddles that appeal to people's desire to solve puzzles. Thus, brief, encoded telegrams from the Civil War era make a powerful combination for public engagement of citizen historians. In addition to a broader public, these materials will be of use to scholars interested in telegraphy, cryptography, communications during wartime, technology, civilian-military relations, and many other aspects of the Civil War or American history more generally. Perhaps the most meaningful outcome is that the collaborative will provide the transcription for and public access to historical records that have not been seen by the public in a format that would allow them to be understood and appreciated, and we believe will add to their understanding of the Civil War. This collaborative project exemplifies the goals of the *NHPRC's Literacy and Engagement with Historical Records* grant category:

- It develops partnerships among several institutions to provide educational opportunities for students and the general public;

- The process of transcribing and decoding the telegrams builds users' digital literacy skills and development of educational modules will "enhance public understanding of and access to historical records."

- Participants are contributing to research by transcribing and decoding the telegrams on an open source platform (Zooniverse), where they are available to a wider audience.

The Eckert Archive: Background on the Source Material for the Project

Some historians consider the American Civil War to be the nation's first modern war. Foreshadowing wars of the twentieth century, the participants in the American Civil War used modern technological devices like railroads, photography, rifled muskets and cannon, ironclad ships, torpedoes, mines, submarines, aerial observation, and telegraphy. The last innovation—telegraphy—dramatically changed communications within society and war. President Abraham Lincoln avidly adopted the telegraph for communicating with Union governors in all aspects of raising and equipping armies and for communicating with commanders in the field and receiving intelligence of the progress of battles, which revolutionized the relationship between the commander-in-chief in Washington and generals leading armies in the field. Telegraphic communication allowed the President to have an impact on campaigns, and even battles, which was inconceivable only a few years earlier.

Central to communication over electric telegraph lines was a method for reducing the alphabet and numbers into a series of distinguishable electrical impulses. Samuel Morse and Alfred Vail developed a code that reduced the alphabet into a series of dots and dashes that could be indented on paper tape, then reassembled by an operator into letters, words, and sentences. By

the time of the American Civil War, three companies had spread telegraph lines among the major cities of the nation, and many young men had been trained in the use of the Morse Code.

When the Civil War erupted in April 1861, securing lines of communication became an essential part of military efforts. Anson Stager, the superintendent of the Western Union Company, developed a sophisticated cipher system with which to communicate without the contents of the messages being discovered. The War Department adopted Stager's cipher system and Stager became the head of the United States Military Telegraph and delegated much of the responsibility in Washington to Major Thomas T. Eckert, who administered the War Department Office of the Military Telegraph throughout the war.

Despite the importance of the United States Military Telegraph to the Union war effort, there is surprisingly little scholarship on its history. For nearly a century and a half, the Eckert family kept a series of ledgers and code books owned by Thomas T. Eckert; this remarkable archive was purchased by The Huntington in 2012. The archive consists of 76 volumes dating from February 2, 1862 to April 6, 1865. Together, there are 15,922 telegrams, of which perhaps 5,400 (34 percent) are enciphered. For detailed descriptions of each volume, see Appendix A. Also included are four cipher books used by Eckert, a ledger of Jay Gould's American Union Telegraph,
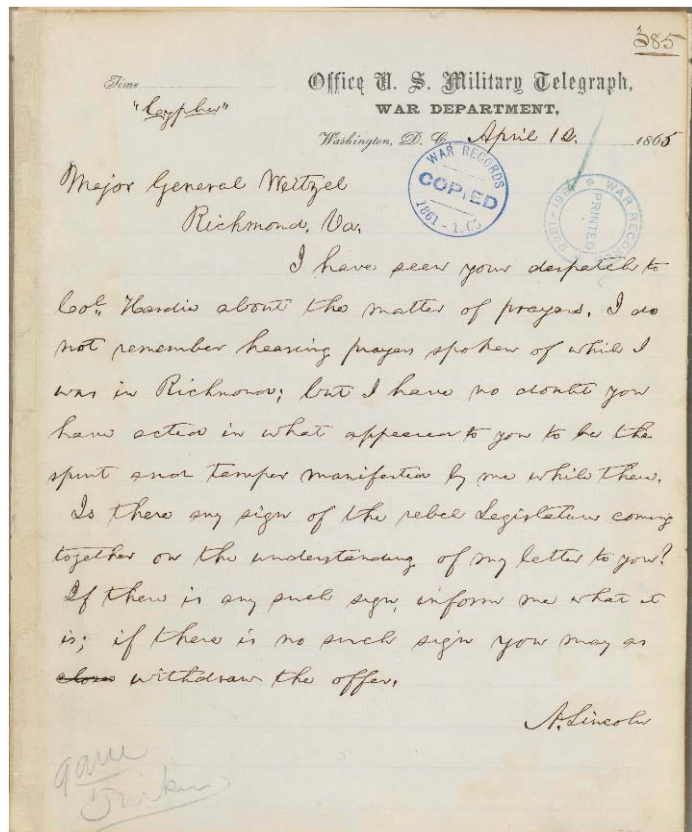

Figure 1—Original Telegram in Abraham Lincoln's Hand

and other volumes related to the business of the Military Telegraph. See Appendix B for the Finding Aid as well as the url: finding aid for more details.

Decoding Civil War Telegrams as a Model Learning Tool

In order to understand the Plan of Work, it may be helpful to the reviewer to understand the complexity of the deciphering as is demonstrated by a letter that President Lincoln sent to Godfrey Weitzel on April 12, 1865. Figure 1 on the previous page shows the text for the telegram and Lincoln's instruction at the top left of the page for the text to be "cyphered." It is written and signed by Abraham Lincoln. Lincoln's telegram reads as follows:

Time _____   Office U.S. Military Telegraph,
"Cypher"   WAR DEPARTMENT,
                                     Washington, D.C., April 12, 1865.

Major General Weitzel
Richmond, Va.

I have seen your despatch to Col Hardie about the matter of prayers. I do not remember hearing prayers spoken of while I was in Richmond; but I have no doubt you have acted in what appeared to you to be the spirit and temper manifested by me while there.

Is there any sign of the rebel Legislature coming together on the understanding of my letter to you? If there is any such sign, inform me what it is; if there is no such sign you may as ~~close~~ withdraw the offer.

A. Lincoln
9am
Tinker

The telegrapher, Charles A. Tinker wrote out Lincoln's message on columned paper and used Cipher No. 1 to encode this message. In the Cipher, code words, or "arbitraries," for the "President of the United States" included "Bologna" and "Bolivia." "Emma" meant 9:00 a.m., and "flood" meant "12" or "12th" for April 12. The telegrapher substituted key words with other arbitraries such as "Galway" for "Richmond," "Walnut" for "Rebel," and "yoke" for "signature." After the signature, the final line was filled with a brief message to complete the grid of ten columns of eleven lines each. Next, the telegrapher also entered a copy of the encoded telegram

in proper order in the volumes that now form a part of the Eckert Archive. The telegram is in proper order, written in columns with arbitraries in place of key words and punctuation.

After writing the message in grid form, the telegrapher prepared the message for transmission by rewriting it according to the route dictated by the selected format. The handwritten instructions at the beginning of the No. 1 Cipher (figure 2 & 3) explain that "After having written the message in columns commence by writing any one of the 'Blind words' after this, two of the Line Indicators taken from the same page as the route used will be used, the
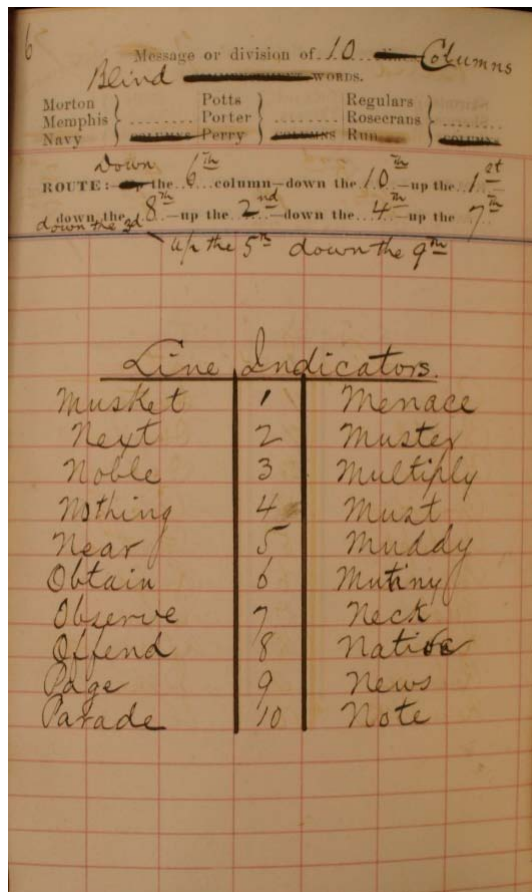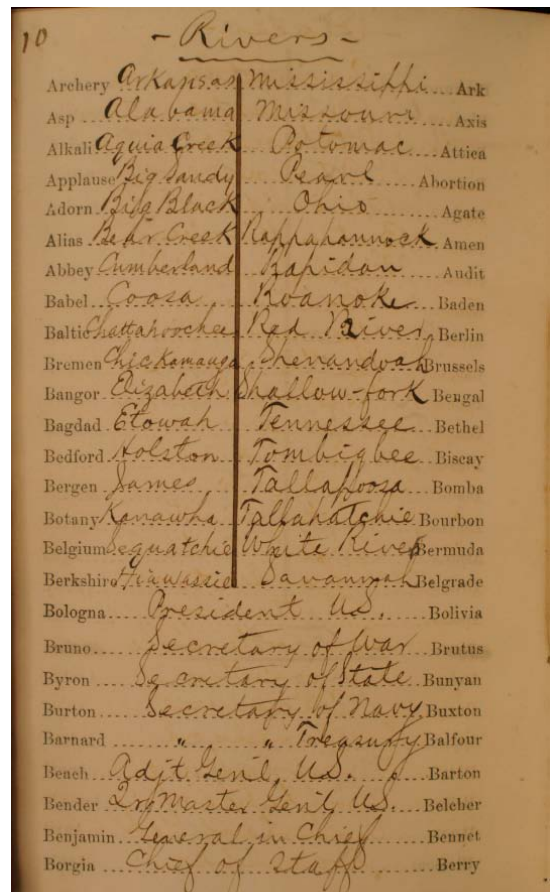

Figure 2—No. 1 Cipher Commencement and Routes

Figure 3—No. 1 Cipher Arbitraries

Figure 4—An example telegram from the Eckert Archive

numbers set indicate the no of column & route." The Line Indicator "next" meant 2 lines, and the Line Indicator "news" meant 9 lines; added together, these words indicated an 11-line message. The telegrapher reordered the message for transmission by reading down column 6, down column 10, up column 1, down column 8, up column 2, down column 4, up column 7, down column 3, up column 5, and down column 9. This encryption process also added "null" words at the end of each column to disguise the message further. The null words at the end of each column are underlined—"mean," "your," "never," etc.

Doing so produced the following enciphered message that could be sent by telegraph without detection, as follows:

Whats next news I the prayers I to while coming star what you you <u>mean</u> dispatch zebra I you spirit there understanding any if the piloted <u>your</u> offer there such of any and have was I to Emma <u>never</u> seen of of no toby Zodiac on there is with what <u>remains</u> yoke as sign my sign temper acted in to paradise flood <u>over</u> weitzel abe remember pekin that my walnut to form such why <u>not</u> say may it if together there you have spoken matter have <u>senses</u> shelter bardie not galway in manifested torch letter in no bologne <u>plenty</u>

dont sign me you legislature me appeared but bearing out unity <u>in</u> your prayers while

doubt the is the is pedlar draw you down

T. T. Eckert

It seems little wonder, then, that the Confederates never broke this code. This telegram was the penultimate message sent by Abraham Lincoln via telegraph, appropriately in cipher, as so many had been over the previous four years. The last telegram Lincoln sent was another on the same day, also to General Weitzel in Richmond and also in cipher. Given the challenging nature of deciphering the Eckert Telegrams, we hypothesize that citizen archivists will become very actively engaged in the project.

2) Plan of Work for the Grant Period

Digitizing the Collection for Accessibility

The first step will be for The Huntington Library to digitize all of the materials and will begin processing them in January 2015. The cost share budget shows only the portion that will be digitized during the grant period, not the entire expenses for digitizing the entire collection. Estimating 65 pages per day, 80 percent of the digitizing will occur during the grant period and is so noted in the cost sharing portion of the budget by items. (See Appendix A: Eckert Work Plan for detailed information on image capture and long-term preservation.)

Working with Zooniverse to Crowdsource the Transcriptions

Beginning in July 2015, Zooniverse will starts work with the archivist partners at The Huntington and the Papers of Abraham Lincoln to develop the software to enable the crowdsourced transcriptions of the telegrams on the Zooniverse website (zooniverse.org). The development, testing, and project launch is expected to take six months and the cost is ~$90,000 under the Zooniverse budget item. The transcription process, plus the deciphering task is quite

labor intensive. Thus, employing volunteer online "citizen archivists" will allow the project to be completed in a shorter amount of time and with a much greater accuracy than would be typical for volunteers working in situ. Further, due to the online nature of crowdsourcing these transcriptions, this project will reach a much wider audience than typical museum volunteers.

Zooniverse is an online citizen science organization founded in 2007 where project development is overseen by a collaborative effort between Oxford University in the UK, Adler Planetarium in Chicago and the University of Minnesota. Zooniverse is the largest academic crowdsourcing organization, partnering with over 400 academic, museum and library institutions around the world and with more than 1.3 million registered volunteers participating in over thirty projects in the sciences and humanities. In 2011, Zooniverse, co-led by researchers at the University of Minnesota, including Dr. Fortson, began its first humanities project with "Ancient Lives," in which volunteers transcribe Greek papyri fragments one character at a time using an online keyboard. In January 2014, Zooniverse, in partnership with the Imperial War Museum (London) and National Archives (Kew) launched "Operation War Diary" to transcribe British unit war diaries from World War I. Volunteers have processed over 100,000 pages of text and spent more than six years of FTE effort on the project. These projects have attracted c. 8,000 and 11,000 users, respectively.

Drawing on seven years of crowdsourcing experience, Zooniverse will create *Operation Decode* to enable volunteers to transcribe and decode telegrams from the Eckert Archive. Zooniverse is currently developing a unique full text manuscript transcription model for a project with Tate Britain (launching mid 2015), in which multiple users will transcribe each line of text and their responses will be automatically compared using a string matrix algorithm to determine consensus. It is estimated that *Operation Decode* will require five online volunteers to transcribe

and "translate" each telegram. For each transcribed line the algorithm will compare users' transcriptions and when a predetermined subset of users has produced the same transcription the system will log this consensus as well as each user's individual transcription. We anticipate that there will be a few instances when consensus does not emerge, in which case human editors, including project organizers and expert volunteers will be asked to arbitrate between various users' transcriptions and produce a final version. The purpose of the algorithm is to minimize the degree of editorial intervention, a bottleneck that has been identified as a major stumbling block to producing good data efficiently in other transcription projects such as *Transcribe Bentham.*[1]

Led by Dr. Fortson, *Operation Decode* will build on existing Zooniverse tools, such as the transcription platform and algorithm, but it will also build in new directions to enable the deciphering task. The project will first ask users to transcribe telegrams, and then give them the opportunity immediately thereafter to use cyphers from the Eckert Archive and the Friedman Collection, which will be transcribed and available in the interface at the start of the project. The multiple transcription and algorithmic approach will ensure that high quality data is captured. When complete, the transcriptions and decoded messages will be ingested into the Huntington Digital Library, where they will be freely available to students, scholars, and the public.

Zooniverse projects work because the Zooniverse team has a deep understanding of user motivation one aspect of which is the ability to more fully investigate and discuss aspects of the project. Communities of volunteers are supported through project 'Talk' forums where they can comment on specific images, ask for help from fellow volunteers and experts and share resources. Each project team is expected to and facilitated in the maintenance of blogs and other social media outreach, in addition to standard 'Talk' participation.

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[1] T. Causer and V. Wallace, "Building a volunteer community: results and findings from Transcribe Bentham" *Digital Humanities Quarterly*, 6 (2012).

During the development process, the Zooniverse team will work closely with the full project team to determine key output data products to be delivered to Huntington Library as well as any input metadata to accompany the telegram images that will allow citizen archivists to follow-up with self-guided inquiry. A "beta" transcription website will provide evaluative feedback on the site design and proper data flow from the front-end to the database. Several hundred Zooniverse volunteers will be solicited to serve as beta testers; in addition several student groups recruited through the Education aspects of the proposal will be given access to the beta site and their feedback recorded. The full transcription project launch will be in two phases: a soft launch, in coordination with the Education team, will be targeted only towards students providing the transcriptions. A full, public launch will follow with the expectation that several thousand to tens of thousands of members of the public will participate.

Developing the Educational Modules and Education Website

While the Huntington continues to digitize the telegrams and the Zooniverse develops the crowdsourcing site for citizen archivists to move through the documents, we will begin working with the education specialists at North Carolina State University and The Huntington Education Division to develop curriculum modules that can be provided through open source teacher and museum educator resource sites, including the Zooniverse education site: ZooTeach.org.

During this period, Interactive Designer for Education and Communications at The Huntington, Ryan D'Orazi, and Professor of Social Studies Education John K. Lee will work together to develop, test and put the education modules online. The educational component of this project is based on the work of John K. Lee and his associates in using Lincoln telegrams to teach students to examine and analyze primary source documents. The telegrams situated in an historical context provide students with opportunities to build their content knowledge and to

apply specific document analysis skills. This component will use an historical thinking scaffold called SCIM-C. Lee has successfully used the SCIM-C Heuristic in his *Lincoln Telegrams* website and iPad application. The SCIM-C model includes the following components.

- Summarizing (Basic facts regarding the document)

- Contextualizing (Situating the document within its specific historical framework)

- Inferencing (Using the context in conjunction with the document to understand the relevance and historical events relating to the document)

- Monitoring (A process of self-reflection)

- Corroborating (Do other documents/resources confirm or challenge the initial inferences?)[2]

Specifically, the project will develop instructional modules for analyzing telegrams from the Eckert Papers. The modules will be designed to support teachers as they work with students to deepen their knowledge of content related to the Civil War and President Abraham Lincoln's use of the telegraph. The instructional module will include the following elements.

- Historical and historiographical background setting the stage for teachers' work with the telegrams.

- An inquiry plan for teachers to facilitate student investigations of compelling questions related to the Eckert collection telegrams.

- Support materials for implementing the inquiry including connections to standards, assessment resources, and suggestions for adapting the inquiries given a variety of teaching contexts.

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[2] David Hicks, Peter E. Doolitle, and John Lee, "History and Social Studies Teachers' Use of Classroom and Web-based Historical Primary Sources," *Theory and Research in Social Education* 32 (2004): 213-47; C. Bolick, David Hicks, John Lee, P. Molebash, and Peter E. Doolittle, "Digital Libraries: The Catalyst to Transform Teacher Education," *AACE Journal* 12 (2004): 213-33.

Each module will be anchored by the second element, the Inquiry Plan. These inquiries will be designed using the guidelines for inquiry suggested in the College, Career and Civic Life Framework (C3 Framework). Dr. Lee was a writer for the C3 Framework and is working with numerous states including New York (see - http://www.binghamton.edu/nys-ss/) and large school districts to design inquiry modules. Additionally, Dr. Lee has used this model to develop inquiry materials for using Library of Congress sources, available at http://www.c3teachers.org/library. These experiences will guide the development of educational materials for this project.

Evaluation and testing are built into the project as it progresses – not as an afterthought. The development of these modules will include input from classroom teachers and piloting in classrooms. Ten teachers will be selected to develop the instructional modules and pilot the materials with guidance from Dr. Lee and the historians at the Huntington Library and the Abraham Lincoln Presidential Library and Museum. Teachers will be accepted for the program based on their prior knowledge and experience with the content and instructional approaches featured in this project. Although the teachers selected will be highly qualified, they will also be provided with additional training on the historical content, digitization process, and the inquiry design model. These ten teachers will be provided with a $1,500 stipend to develop and pilot the instructional modules.

Introducing the notion of complexity through the telegrams and their enciphering is important to the learning process. As complexity in the historical problem increases, students come to see that their understanding need to be strengthened; in turn, they push forward to know more. This process is useful pedagogically in that it supports a learning cycle where the more students know, the more they realize they need to know. In addition, working with the telegrams

brings the issue of historical significance to the fore. Historical significance is a critical second-order historical concept with which students should have regular practice, and the telegrams of the Eckert Papers provide that opportunity.

Project Timeline

Appendix A lays out the project work plan in further detail. The following chart provides an overview of the timeline of how the major pieces of the project will work together.

Decoding the Civil War Project Timeline	2015						2016												2017					
	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J
Digitization of Eckert Archive (Huntington)	█	█	█	█	█	█	█	█	█	██														
Creation of Interface for Transcription (Zooniverse)		█	█	█	█	█	█	██																
Beta testing of transcription interface (Zooniverse)									██															
Soft launch of transcription interface (Zooniverse, all)										██														
Transcribe Telegrams (Students)										██	█	█	█	██										
Full public launch of transcription interface (Zooniverse, all)														██										
Transcribe Telegrams (Public)															██	█	█	█	█	█	█	█	█	██
Metadata and Image Transfer to Eckert Collection (Huntington)																██	█	█	█	█	█	█	█	██
Develop Instructional Modules (NCSU, Huntington)		██	█	█	█	█	█	█	██															
Pilot Instructional Modules (NCSU, Huntington, ALPLM)											██	█	█	█	█	██								
Promote Telegrams, Zooniverse Project, Instructional Modules (All)											██	█	█	█	█	█	█	█	█	█	█	█	█	██

3) Products and/or Publications to be Completed During the Grant Period

This project proposes to develop two integrated products:

- A web-based interface in the Zooniverse suite of projects to provide access to images of each telegram in the Eckert Papers and to encourage the public to transcribe the telegrams and decode those that are partially enciphered;

- A collection of instructional modules that facilitates the use of the Eckert Papers for primary source analysis and evaluation, allowing classes to understand and utilize the telegrams in the Eckert Papers for primary source research;

and will result in the following digital products and archives:

- Digital capture and metadata for the full Thomas T. Eckert Papers at The Huntington Library. Long-term digital preservation of the nearly 14,000 master TIFF files and accompanying metadata and transcriptions.

- Unlimited web access to the digital images and transcriptions in [The Huntington Digital Library](), including the ability to download images, for the use of scholars and the public at large.

The project team expects to present work related to these products and their development at appropriate conferences and workshops; at least one publication describing the products will be submitted to a peer reviewed journal and/or published through conference proceedings.

Education, Marketing and Dissemination of Findings and Products

The Huntington has a distinguished history of developing education programs for K-12 students and serves over 25,000 students annually. Two of the Education Division's initiatives have been particularly successful and have relevance to this project.

Torres High School Collaboration: An intensive collaboration between The Huntington Library, Art Collections and Botanical Gardens and the new Esteban E. Torres High School in East Los Angeles. Statistically, the majority of students from this neighborhood do not graduate and face overwhelming challenges stemming from poverty, high crime rates, and chronically underfunded schools. This partnership is groundbreaking because of its depth. The results from the first three years of the program have been more than gratifying: 82% of the students graduate compared to 34% regionally. We will incorporate Decoding the Civil War into the Torres Program as a way to test and develop the educational modules.

The program allows The Huntington to accomplish a critical part of its educational mission in an innovative way focusing on the 5,000 Torres students, faculty, and their families by providing long-term, focused attention, and unparalleled access to the Huntington's collections and people. The Partnership, designed by The Huntington educational staff, includes extensive teacher training in history, literature, art, and gardening; transportation for multiple onsite visits; corresponding programming to take place on their campus; employment openings for student volunteers as well as free family days and much, much more. By showing these students, teachers, and families that a place like The Huntington is willing to invest in them, we can raise sights about what students believe they can achieve, improve graduation rates, and open them up to new career paths.

Common Core Teacher Training: The Pasadena Unified School District ("PUSD") is comprised of 26 schools throughout a 76-square mile area of Pasadena, Sierra Madre, Altadena and unincorporated areas of Los Angeles. Among the most under-resourced and under-served in the state, of the nearly 18,000 K-12 students served, 70% qualify for free or reduced lunch and a high proportion are English language learners. API scores, though steadily climbing due to a concerted focus on improvement, are well below state and federal norms. It is in this context that the statewide transition to the Common Core is occurring representing a big change for students—and for their teachers – with the real challenge lying in its execution. In the absence of sustained and high quality Common Core professional development programs, teachers, and at-risk learners like those in PUSD risk falling even further behind.

The PUSD asked The Huntington to be its partner and build on over a decade of Huntington experience using primary source analysis – at the heart of the Common Core - to provide quality Common Core training to every single teacher in PUSD. The Huntington has

raised the private funding to support the project and we are now in the second year of providing teacher training to the 1,100 teachers in the PUSD. The responses have been incredible, with teachers actually saying that they enjoy teaching again. We will integrate the *Decoding the Civil War* into the teaching modules for all Common Core teacher-training programs.

Marketing: The Huntington has a successful marketing and communications department that will work with the project partners to not only tell the story of the project, but share the Zooniverse site and educational modules with communities of common interest such as the Organization of History Teachers. Our Education Division regularly presents at CASE and a myriad of humanities-based educational associations and the museum and libraries associations. Our people are networked into the communities and our network bridges education, libraries, research and museums.

4) Key Staff

Brief vitae for all staff are available in Appendix C.

- Dr. Daniel Lewis is the Chief Curator of Manuscripts at the Huntington Library. He will be responsible for promoting all aspects of the project among historians, the archival community, and visitors to the Huntington Library.

- Dr. Olga Tsapina is the Norris Foundation Curator of American Historical Manuscripts at the Huntington Library. She will be responsible for selecting key telegrams and topics for the educational modules and for writing introductory text and suggested searches, as part of the presentation of the Eckert Papers in the Huntington Digital Library.

- Mario M. Einaudi is the Kemble Digital Projects Librarian at the Huntington Library. He holds an M.A. in Modern European and Diplomatic History from George Washington University and an M.L.I.S. from San Jose State University. He will act as Project Manager,

tracking the code books and ledgers as they move from their home in the Manuscripts stacks to the Imaging Services Department during the digitization process. He will ingest the image files, metadata, and transcriptions into CONTENTdm, performing quality control checks to insure that the compound objects and associated metadata display correctly to the public. He will supervise Kate Peck's work while she participates in the project.

- John Sullivan is the Head of the Imaging Department at the Huntington Library. He holds a M.A. in Photography from California State University, Fullerton and has had a long career at The Huntington, overseeing many large-scale digitization initiatives, including the NEH-funded Maynard L. Parker Photographic Archive and Shakespeare Quarto Archive. He will supervise the Project Photographer and the Image Archives Assistant.

- Kate Peck is the Library Assistant, Rare Book Cataloging at the Huntington Library. She will create metadata and assist Mario with the ingest of the 13,859 image files into CONTENTdm for open source presentation in the Huntington Digital Library.

- Dana Barshun is the on-call Project Photographer at the Huntington Library. He will be responsible for scanning the code books and ledgers.

- Devonne Tice is Library Assistant, Image Archives at the Huntington Library. She has been in her position since 1998 and will be responsible for ingesting the 13,859 digital files and associated metadata into the Huntington's DAM (digital asset management system), and copying the files and metadata to redundant hard drives for permanent retention.

- Dorothy Auyong is the Principal Rare Book Cataloger at the Huntington Library. She will be responsible for creating and editing NACO name authority records in the Library of Congress online authority file for key individuals mentioned in the telegrams in the Library of Congress online authority file.

- Ryan D'Orazi is Interactive Designer for Education and Communications at The Huntington Library and will be responsible for developing the education products along with John Lee.

- Lucy Fortson is Associate Professor of Physics, PI of the Zooniverse efforts at the University of Minnesota (UMN) and Chair of the Board of the Citizen Science Alliance, the parent organization of the Zooniverse. She will be responsible for managing the software developer at UMN and interfacing with other critical Zooniverse staff to deliver the "*Operation Decode*" crowdsourcing project and subsequent transcribed data to the Huntington.

- Dr. John K. Lee is Associate Professor of Social Studies Education at North Carolina State University. He is author of the College, Career, and Civic Life Framework and is the director of the Digital History and Pedagogy Project. He will be responsible for the development of educational materials.

- Dr. Daniel W. Stowell is the director and editor of the Papers of Abraham Lincoln and the director of the Center for Digital Initiatives at the Abraham Lincoln Presidential Library and Museum. He will be responsible for the selection, transcription, and contextualization of telegrams for use in the Civil War Telegrams curricula.

An advisory panel formed from each of the institutions will be convened by phone quarterly to review the progress, problems, and evaluate the project plan. The advisory panel will include:

- Dr. Daniel Lewis: Chief Curator of Manuscripts at the Huntington Library

- Dr. Victoria Van Hyning: Digital Humanities researcher, Zooniverse, Oxford University, UK

- Dr. Daniel W. Stowell: Director and Editor of the Papers of Abraham Lincoln

- Dr. J. David Hacker: Associate Professor in U.S. History at the University of Minnesota and the 2012 recipient of the John T. Hubbell Award in Civil War History.

5) Measurable Project Objectives & Further Evaluation

We expect that the proposed project will complete the following objectives:

1. The staff of the Huntington Library will digitize approximately 16,000 telegrams from the Eckert Archives; other than the purchase of hard drives, all funding for this will be paid for by private funds.

2. Several thousand members of the general public will transcribe all telegrams from the Eckert Archive through Zooniverse.

3. John K. Lee and The Huntington Education Division will create ten instructional modules for use with the telegrams of the Eckert Papers.

4. Ten teachers will be recruited as co-developers of the education modules; at least 300 students will participate in the project.

5. The Huntington Education Division and John K. Lee will develop a website to provide open source access to the training modules.

6. The Huntington Communications Division and The Huntington Education Division will work with Torres High School and PUSD disseminating the education products to at least 1000 teachers of at-risk students.

The following evaluation aspects will be built into the project in addition to evaluation plans detailed in the work plan (above Section 2 and Appendix A):

- Evaluation of the decoding process to be used by the "citizen archivists" will be conducted by online participant surveys to measure what the participants are learning/experiencing as part of the process.

- Summative evaluation of the education modules as experienced by the Torres and PUSD partners will be conducted through the existing Huntington evaluation for these programs.

DECODING THE CIVIL WAR: DETAILED WORK PLAN

The Huntington Library

The successful completion of the digitization portion of the project relies on the expertise of the staff of The Huntington Library; this group has more than ten years of experience working on large-scale, private and public grant-funded projects, including the Maynard L. Parker Negatives (5,000 images) and Southern California Edison Photographs and Negatives (70,000 images) collections. The Library follows standards for digitization, metadata and quality control as outlined by the [Technical Guidelines for Digitizing Cultural Heritage Materials](#) compiled by agencies participating in the Federal Agencies Digitization Guidelines Initiative (FADGI) and the [California Digital Library (CDL) Guidelines for Digital Objects.](#)

The proposed project will result in the following deliverables:

- Digital capture and metadata for each page of the ledgers, a total of 12,117 scans, and cipher books, 1,742 additional scans, in the [Thomas T. Eckert Papers at The Huntington Library.](#) Long-term digital preservation of 13,859 master TIFF files and accompanying metadata and transcriptions.

- Unlimited web access to the digital images and transcriptions in [The Huntington Digital Library](#), including the ability to download images, for the use of scholars and the public at large.

- Educational modules created for K-12 which will utilize the digitized telegrams, cipher books and code books.

- Transcriptions of all telegrams completed by Citizen Archivists during Zooniverse "Operation Decode" project.

Project Stages

Stage 1: Page Counts and Metadata Creation, Project Cataloger and Image Scanning of Code Books (Sept. 2014-Feb. 2015)

Prior to the start of the grant, Mario Einaudi, Digital Project Librarian (DPL) created a FileMaker database and template to capture the initial metadata for the project. Library assistant Kate Peck then examined each cipher book and ledger, creating descriptive metadata and an accurate page count. These counts can be found at the end of Appendix C. Note that the number of pages counted (16,667) is higher than the number of scans (13,859) due to the fact that many of ledgers have large sections that are blank; these blank pages will not be scanned. These and other pages were flagged with special instructions for the Project Photographer as needed. Shoot lists for the Project Photographer will be generated from this data.

Beginning sometime in January 2015, a Huntington photographer will scan each page of the code books. This work is estimated to take approximately 35 days. These files will be used in the future to help decode the telegrams that are in code. Digital files of the code book pages will be added to the Huntington DAMS as part of the workflow, and will be published in The

Huntington Digital Library at the same time as the rest of the Eckert files, when the grant is completed.

Stage 2: Image Scanning Creation, Project Photographer (July 2015-April 2016)

Retrieve Ledgers, create shoot lists, and begin scanning. The Project Photographer will begin digitization of each ledger. Ledgers will be paged from the stacks and scanned in series order as recorded in the finding aid for the Thomas T. Eckert papers. Scanning will be will be done at 300 ppi using the a Phase One P45 digital scanning backs on a Hasselblad 2x1/4-inch camera equipped with Carl Zeiss 120mm lens and Capture One software. Digital RAW files are converted into master TIFFs, which are stored on a series of redundant hard drives and checked and refreshed by Devonne Tice, archivist for Imaging Services.

Image File Approval. Project Photographer will examine each digital scan and verify that file size, bit depth, resolution, and image format are to project standards and that images have no debris or artifacts. This work will be overseen by the Head of Imaging Services. Once scanning of a ledger is completed, the project photographer will notify the DPL that the scans are ready for review. Derivative JPEG images will be created for publication in the Huntington Digital Library after the master TIFF files have been checked.

Quality control and creation of additional metadata. The DPL will perform a second quality control check of the scans, comparing them against the shoot list. Kate Peck will then add the names of senders, recipients, and dates on the pages whenever this information is clear and not in cipher code. All of this information will be captured in the FileMaker databases.

Stage 3: Metadata and Image Transfer to Zooniverse (September 2015-July 2016)

Metadata creation for transfer. Once a ledger is scanned, the JPEG's and metadata will be transferred to Zooniverse for inclusion in the Operation Decode part of the project. Metadata will be created by the DPL to aid in this transfer, including output from the FileMaker databases of appropriate object and page level metadata.

Return from Zooniverse. All digital objects will be appropriately tagged and transcribed as part of Operation Decode. Zooniverse will then transfer back to the Huntington Library the transcriptions provided by the Citizen Archivists.

Stage 4: Metadata and Image Transfer to Eckert Collection (September 2016-July 2017)

Create Crosswalk and Landing Page. DPL creates crosswalk from Filemaker Pro database to CONTENTdm. DPL creates landing page with text written by Olga Tsapina and Dan Lewis, along with suggested searches for key topics.

Metadata/Image File Upload. The DPL transfers metadata records from Filemaker Pro along with POST image files into CONTENTdm for publication in The Huntington Digital Library. As part of the publication process, the JPEG files are converted to JPEG-2000 format in the Huntington's CONTENTdm instance, which is hosted on servers by OCLC. The DPL performs a final check of metadata and scans for quality control. DPL approves images and metadata

records for each ledger. At this time the information from Zooniverse will also be attached to the appropriate page and added as OCR text on a page level.

Stage 5: Project Complete (July 2017)

Project Complete. The Thomas T. Eckert Collection of Civil War Telegrams is published in The Huntington Digital Library.

The University of Minnesota (Zooniverse)

Through her role as PI of the Zooniverse@UMN project, Dr. Lucy Fortson will oversee the software development of the "Decoding the Civil War" website to be hosted on the Zooniverse crowdsourcing platform. A web developer will be hired to carry out the coding required for the software development. The nominal period of performance will coincide with "Stage 3" above between July, 2015 and July, 2016. The workplan for Zooniverse comprises:

1. Iterative consultation with the project team through-out development, design and launch of "Operation Decode"
    a. Determining input data formats and resolution; reformatting if needed would be the responsibility of Prime Institution
    b. Determining key metadata formats if required
    c. Determining key output data products for research team
    d. Determining specifications for additional modes of interaction with raw and processed data by volunteers (e.g. metadata going into the community discussion tool or other tools)
    e. Determining navigation and branding elements critical for project success
    f. Providing advice to project team on launch best-practice
2. Design of the website ("skin") including navigation and branding elements
3. Development of the front-end interface and testing for proper data flow from the website to the backend (ensure development of front-end is compatible with back-end software of Zooniverse platform).
4. Beta testing of the full stack (website, interface, backend) and recruitment of beta testers
5. Fixes to website design or front-end software suggested by beta test results
6. Availability of developer at launch and first two weeks to fix mission critical technical issues
7. Availability of developer through first two months after launch for maintenance of "Operation Decode" software
8. Assurance that final data products are delivered to The Huntington Library as specified in the "Stage 4" above. The final data product includes individual transcriptions and agreed upon metadata but not consensus output.
9. Consulting on development of consensus algorithms to apply to final data products.

North Carolina State University & The Huntington Library

1. Development of the Educational Modules and Education Website (Sept - Dec 2015).

- Working with Ryan D'Orazi (Huntington) and John Lewis (NCSU), Daniel Stowell (Abraham Lincoln Presidential Library and Museum) will select the telegrams that will be used in the education modules.

- Led by John Lewis, this team will develop the historical contextualization needed for the placement of the telegram transcription and decoding into the curricula.

- Selection of ten teachers as co-developers of the instructional modules and input into formative evaluation. Teachers will be selected through Huntington partnerships and NCSU as well as ALPLM partnerships.

- The Inquiry Plans for the modules will then be developed along with the support materials for implementation of the inquiry (assessment resources, connections to standards, adaption and adoption techniques for multiple teaching contexts, etc.)

- Development of education website to host inquiry plans and supporting material along with discussion board for teachers and a link to the Zooniverse transcription interface. Website will be hosted at Huntington.

- The Huntington and North Carolina State University will use their partner middle and high schools to market test the educational modules in order to develop the educational website.

- Incorporation of evaluation feedback from teacher-developers into instructional modules

2. Pilot Testing of the Educational Modules (Feb. – May 2016)

- Pilot delivery of first set of instructional modules via teacher-developers

3. Redesign and Delivery of final Educational Modules (June 2016 – June 2017)

- Remedial Evaluation: assessment of pilot and redesign of any modules based on feedback from pilot

- Description of education modules incorporated into promotional materials such as for teacher workshops at all project team institutions and related teacher associations such as the Organization of History Teachers

- Ryan D'Orazi and the Huntington Education team will incorporate the finalized education modules into the PUSD Common core teacher-training programs as well as the Torres High School Program.

Overall Project Timeline:

Decoding the Civil War Project Timeline	2015						2016												2017					
	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J
Digitization of Eckert Archive (Huntington)	█	█	█	█	█	█	█	█	█	█														
Creation of Interface for Transcription (Zooniverse)		█	█	█	█	█	█	█																
Beta testing of transcription interface (Zooniverse)								█	█															
Soft launch of transcription interface (Zooniverse, all)									█															
Transcribe Telegrams (Students)									█	█	█	█												
Full public launch of transcription interface (Zooniverse, all)												█												
Transcribe Telegrams (Public)												█	█	█	█	█	█	█						
Metadata and Image Transfer to Eckert Collection (Huntington)																█	█	█	█	█	█	█	█	█
Develop Instructional Modules (NCSU, Huntington)			█	█	█	█																		
Pilot Instructional Modules (NCSU, Huntington, ALPLM)								█	█	█	█	█												
Promote Telegrams, Zooniverse Project, Instructional Modules (All)							█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█

Appendix B – Finding Aid

Find Aid for the Thomas T. Eckert Papers

The Huntington Library, Manuscripts Department, 2014

Descriptive Summary

Title: Thomas T. Eckert papers
Dates: 1861-1877
Collection Number: mssEC 1-76
Creator OR Collector: Eckert, Thomas Thompson, 1825-1910
Extent: 76 volumes
Abstract: Professional papers of Thomas T. Eckert, chiefly related to his duties as part of United States Military Telegraph Office during the Civil War.
Acquisition Information: The collection was purchased in part by the Library Collectors' Council from Seth Kaller, January 2012.

Biography

Thomas Thompson Eckert began his career as an operator in the Morse Telegraph Company; in 1852 he became the head of the Chicago Branch of the Union Telegraph Company. In the fall of 1861, Eckert was appointed Assistant General Superintendent of the United States Military Telegraph. The Telegraph was organized from the Western Union Company as an expressly civilian service, subordinated directly to the Secretary of War and the President. The service remained under the civilian control, despite numerous attempts to put it under the command of the Signal Corps. In February 1862, Eckert was put in charge of all telegraphic operations of George B. McClellan's Army of the Potomac. He remained with McClellan throughout the Peninsula campaign, supervising construction and operation of field telegraph offices in Virginia and Maryland. In April 1863, when the General Superintendent of the Military Telegraph Anson Stager moved his office to Cincinnati, Ohio, Eckert was recalled to Washington and appointed the head of the Military Telegraph office at the War Department. In addition to managing the Telegraph Washington office, Eckert was entrusted with important political, intelligence, and diplomatic missions. In March 1865, he was promoted to the rank of Brigadier General, and on July 1866, became Assistant Secretary of War. He held this position until he resigned from the War Department in February 1867. In the post-war decades, Eckert managed first the Vanderbilt family's Western Union and then its chief competitors, Jay Gould's Pacific Telegraph Company and the then American Union Telegraph. From 1893 to 1900 he was the president of Western Union, and then served as chairman of the company's board of directors until close to his death in October 1910.

Arrangement

The collection is organized into seven series: 1. United States Military Telegraph Ledgers; 2. The Army of the Potomac and Fort Monroe Telegraph Ledgers; 3. Thomas T. Eckert Letterpress Books; 4. Charles Anderson Dana Telegraph Ledgers; 5. United States Military Telegraph Code Books; 6. United States Military Telegraph Miscellaneous Ledgers; 7. Thomas T. Eckert Miscellaneous Material Post Civil War.

Scope and Content

The collection is made up mostly of items related to Eckert's duties as part of the United States Military Telegraph Office during the Civil War, including 35 volumes of telegram ledgers containing roughly 16,000 telegrams from 1862 to 1866. These include telegrams both still in code and decoded (the sent messages are ciphered; the received telegrams are mostly decoded).

Series one includes 14 United States Military Telegraph volumes containing telegrams received by the War Department (1862, Feb.-1867, August) and 7 volumes of telegrams sent from Washington (1862, Feb.-1867, July). Included are messages to and from Abraham Lincoln, Edwin M. Stanton, George B. McClellan, Henry W. Halleck, Ulysses S. Grant and others. Subjects include: the campaigns of the Union armies in the Eastern and Western theaters; intelligence and covert operations; transportation; communications; hospitals; troop provisioning and logistics; personnel issues; fugitive slaves; etc.

Series two includes four volumes of telegrams sent and received from the Army of the Potomac and Fort Monroe (1862-1865).

Series three includes eight volumes of telegrams received and sent by Major Thomas Eckert (1864-1866). Subjects include the construction, repair, and maintenance of the Union telegraph lines; transportation; relationship with the press and the agents of Reuters and Associated Press; intelligence and covert operations in 1864 and 1865; the elections of 1864; etc.

Series four includes two volumes of telegraphs from special investigating agent and Assistant Secretary of War Charles Anderson Dana sent from Chattanooga and Knoxville (1863-1864).

Series five includes 32 volumes all related to ciphers and cipher codes used by the United States Military Telegraph. This series consists of: a volume giving location of ciphers and cipher keys arranged by Colonel Anson Stager; miscellaneous handwritten cipher books; cipher books for generals and places; eight copies of cipher book #1

(1861-1862); two copies of cipher book #2 (approximately 1866); 18 copies of cipher book #5 (1865-1866); and 1 copy of cipher book #9 (approximately 1865). These cipher books often have a listing of the holders of that particular cipher written in the volume, as well as letters and telegrams regarding the cipher.

Series six includes five miscellaneous volumes related to the United States Military Telegraph, including: a pass book; two volumes related to supplies and requisitions; a ledger of telegram costs and numbers of words sent; and an account of money collected for the American Telegraph Company at the Military Telegraph Offices in the Department of the Potomac.

Series seven includes four volumes belonging to Major Thomas Eckert dealing with his post-war career. This series consists of: a money receipt book, accounts of the Atlantic and Pacific Telegraph Company, and two copies of the cipher codes for weather by the U.S. Signal Service, Division of Telegrams and Reports (1877).

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Full finding aid available, Online Archive of California (OAC):

http://oac.cdlib.org/findaid/ark:/13030/c86m3964/