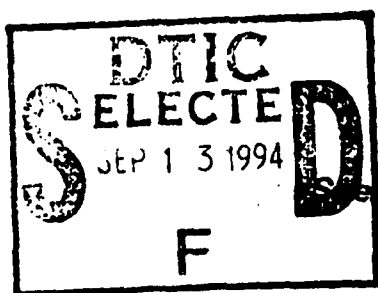


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ANTI-ARMOR DEFENSE DATA STUDY
(A2D2)

DRAFT FINAL REPORT
VOLUME I -- TECHNICAL REPORT



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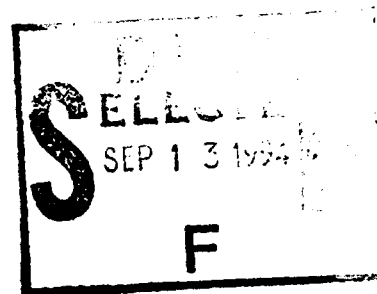


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ANTI-ARMOR DEFENSE DATA STUDY
(A2D2)

DRAFT FINAL REPORT
VOLUME I -- TECHNICAL REPORT



MARCH 9, 1990

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PREPARED FOR
THE US ARMY CONCEPTS ANALYSIS AGENCY

UNDER

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19. ABSTRACT (Continue on reverse if necessary and identify by block number)

The objective of the effort was to collect historical data on at least five actions where US was in defense of enemy armor. The data will be used in a joint US/UK analysis of the degradation in anti-armor defense effectiveness under combat conditions.

Seventeen combat actions were described in detail from the engagements at St. Barthelmy, Fantay and Abbaye Blanche, France during the battle of Mortain in August 1944.

These combat actions are presented in both narrative form and in data tables with all identified data displayed. A database and hard copy file was also prepared and delivered as a final product.

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STUDY SUMMARY

ANTI-ARMOR DEFENSE DATA STUDY (A2D2)

PRINCIPAL FINDINGS

There are data available at the level of detail required for evaluating US defensive anti-armor combat actions during WWII. They are primarily in the battles and engagements in the 1944 1945 North Europe theater. There are still surviving WWII veterans of these actions that provide a good source of data.

PRINCIPAL LIMITATIONS

Detailed data are not available in all WWII anti-armor battles and engagements, particularly in the North African campaigns.

SCOPE OF EFFORT

The scope of the effort was to collect, organize and document detailed historical data on five combat actions in which US forces were defending against enemy armor attack in WWII. Defensive actions were not to include tanks against tanks.

STUDY OBJECTIVE

The objective is to collect historical data on five US anti-tank actions in WWII. The data will be combined with comparable data assembled by the UK and used in a joint US/UK analysis of the degradation in anti-armor defense effectiveness under combat conditions. The degradation factors will allow projections of the combat performance of future anti-armor defenses to be based upon a balanced combination of historical and instrumented field test data.

BASIC APPROACH

The approach was phased with this study being Phase I. Phase I included expanding the list of 30 potential engagements for detailed data collection provided by the Center for Military History to 46 potential engagements, performing a preliminary literature search of source data for the 46 engagements, prioritizing the list and developing detailed data collection plans for the top ten engagements. Data was collected for the number 2 engagement, as chosen by the US Army Concepts Analysis Agency, to determine if the detail data was truly available and combat actions could be described at the level required. In addition, resources would be assessed for doing so. A database, hard copy files of all source material and narratives of the actions were developed. Phase II would be based upon acceptable findings in Phase I and would extend the number of combat actions developed.

REASON FOR PERFORMING THE STUDY

The UK Defense Operational Analysis Establishment (DOAE) has quantitatively compared small arms performance in actual combat with their performance in instrumented field trials. The latter generally form the basis for inputs to US Army wargames and simulations. Because of the promise of DOAE's approach, an informal agreement was reached between the US Deputy Under Secretary of the Army (Operations Research) and DOAE to pursue a collaborative study to extend this analysis to anti-tank weapons.

STUDY SPONSOR

US Army Concepts Analysis Agency

PRINCIPAL INVESTIGATOR

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COMMENTS AND QUESTIONS

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SECTION 1 INTRODUCTION

1.1 BACKGROUND

It is widely recognized that weapon performance in combat is much lower than anticipated from firing range or field experimentation results. Over the last several years, researchers at the United Kingdom's Defence Operational Analysis Establishment (DOAE) have quantitatively compared small arms performance in actual combat with their performance in instrumented field trials. These results confirmed and extended earlier work (e.g., S.L.A. Marshall's work during WWII and Korea) that reported large differences between weapon performance in combat and estimates based on either firing range or field trial results. This is a matter of considerable interest, because the latter generally forms the basis for inputs to US Army wargames and simulations. Because of the promise of DOAE's approach, an informal agreement was reached between the US Deputy Under Secretary of the Army (Operations Research) and DOAE to pursue a collaborative study to extend this analysis to anti-tank weapons. In particular, it was envisioned that US data could be collected for several actions in which US forces were defending against enemy armor attacks. A preliminary evaluation of the feasibility and desired scope of this effort was performed by the US Army Center for Military History (CMH) prior to the development of the Statement of Work for this effort. Their study was aimed at verifying the availability of records likely to contain useful data on the performance of US anti-tank weapons. The results of their study identified 30 candidate anti-tank engagements that had potential for developing at least 30 actions.

1.2 OBJECTIVE

The objective of this effort is to perform a more detailed literature search on the engagements identified to determine the availability of data and to collect detailed historical data on at least five combat actions from these engagements where US forces were defending against enemy armor attacks. The

detailed data collection for these five actions will determine if there are sufficient valid data to support the envisioned larger analysis. If the initial data collection indicates feasibility, then the effort will be the initial increment of a larger effort in which data will be accumulated on one hundred combat actions. The total data set will then be used in a joint US/UK analysis of the degradation in anti-armor defense effectiveness under combat conditions. The resulting degradation factors will allow projections of the combat performance of future anti-armor defenses to be based upon a balanced combination of historical and instrumented field test data.

1.3 LIST OF ENGAGEMENTS

Upon initiation of this task order, SAIC identified an additional 17 engagements, based upon our own experience and knowledge, that were potential candidates and added these to the original list compiled by CMH and included in the SOW. Table 1-1 lists the 30 engagements identified by CMH (1 to 30) and the additional 17 added by SAIC (31-47). A further explanation of the engagements is given in Section 2.

1.4 DATA REQUIREMENTS

The Statement of Work included several references to desired data for anti-tank actions. Since the lists differed in some instances, further discussions were held with the Technical Monitor in order to consolidate and prioritize the data requirements. Table 1-2 presents the list of data collection objectives, ordered by those data elements required for an action to be of any value (primary), additional data that should be compiled (secondary), and those data that would be good to have as well (tertiary).

TABLE 1-1. LIST OF ENGAGEMENTS FOR ASSESSMENT

NO.	ENGAGEMENT	NO.	ENGAGEMENT
1	Sbeitla, Tunisia	23	Hotton, Belgium
2	Sbeitla, Tunisia (different units)	24	Stoumont, Germany
3	El Guettar, North Africa	25	Longchamps, Belgium (3 Jan)
4	Djebel el Guessa, North Africa	26	Longchamps, Belgium (4 Jan)
5	St. Jean-de-Daye, France (9 July)	27	Butzdorf & Tettingen, Germany
6	St. Jean-de-Daye, France (11 July)	28	Maison Rouge, France
7	Notre Dame-de-Cenilly, France	29	Bolsar, Germany
8	Near #7	30	Kirchboren, Germany
9	Near St. Denis-le-Gast, France	31	St. Barthelmy, France
10	Hill 317, Mortain, France	32	Gela, Sicily
11	Abbaye Blanche, France	33	Salerno, Italy
12	Arnaville, France	34	Anzio, Italy
13	Dieulouard Bridgehead, France	35	Arnhem
14	Luneville, France	36	Manhay Crossroads
15	Schmidt, France	37	Baraque de Fraiture, Belgium
16	Kommerscheidt, Germany	38	Clervaux
17	Distroff, Germany	39	Marnach, Luxembourg
18	Lucherberg, Germany	40	Rochefort, Belgium
19	Murringen, Germany	41	Le Gleize
20	Krinkelter Wald, Germany	42	Stavelot, Belgium
21	Rocherath, Belgium	43	Battle of Five Points, France
22	Dom Butgenbach, Germany	44	Hosingen, Germany
		45	Bastogne, France
		46	Heinerscheid, Luxembourg

1.5 METHODOLOGY

In responding to the SOW, SAIC proposed a phased approach to collecting the detailed data required. Phase I was structured to provide a better estimate of the feasibility of finding and collecting the detailed data needed and of the resources required to do so. Phase I consisted of the compilation of a list of at 46 engagements (expanding upon CMH's original 30 engagement list), a more comprehensive literature (source) search of the revised engagement list, prioritization of the list of engagements based upon the literature search, development of data collection plans for the top ten engagements, and, originally, the detailed preparation of one action from the top engagement.

TABLE 1-2. DATA COLLECTION OBJECTIVES

PRIMARY	SECONDARY	TERTIARY
Disposition of defensive weapons/location relative to attack	Artillery bombardment	Type of attack maneuver
Strength of US infantry	Obstacles	Quality of defensive preparation
Size and activity of infantry with armor attack	Meteorological data	Extent of warning and intelligence
No. and type of AT weapon in visual contact with the enemy	Time of day	Air/Artillery support and suppression
No. of enemy tanks, armor SP guns	Terrain	Overwatching vs. maneuvering tanks
US tanks present	Maximum operational effectiveness range	Supply of on-hand ammunition
Casualties (personnel)	Rounds fired by type	
No. and type of tank, SP gun casualties (enemy)	Maps	
Narrative		

Phase II would be recommended, given that Phase I was successful, and would involve the detailed data collection of the remaining nine actions from the ten that were originally requested.

The top engagements (based upon the amount of source material found during the literature search) came from the battle of Mortain, France in August 1944. The engagement at St. Barthelmy was selected as the candidate from which to describe one detailed action. As the detailed description of one action from St. Barthelmy progressed, it became evident that it was most efficient to collect data on all engagements and actions at Mortain at one time. As the data were analyzed and developed, SAIC found that descriptions, reports and interviews from Mortain were more abundant than originally thought. The Statement of Work

was amended to include 5 actions in the first Phase. In the end, SAIC was able to describe 14 actions from the engagements at Mortain in Phase I. It must be noted, however, that Mortain is a somewhat unique case in terms of amount of data recorded. It was a turning point in the campaign in Northwest Europe and, therefore, has been allotted a great deal of time and study, even at the time of its occurrence. In addition, SAIC was fortunate in finding veterans of those actions who substantially added to the repository of data available.

The accomplishment of this effort consisted of the following seven tasks,

- | | |
|--------|--|
| Task 1 | Assess Data for Candidate Engagements and Select Ten Engagements for Detailed Analysis |
| Task 2 | Prepare Data Collection Plans |
| Task 3 | Data Collection, Compilation, Organization and Appraisal |
| Task 4 | Identification of Forces Engaged in Action |
| Task 5 | Summarize the Data |
| Task 6 | Narrative Account of the Actions |
| Task 7 | Technical Report |

and was performed over a 8 month time period. SAIC used a team of operations research analysts, military historians and researchers to identify, collect, compile and summarize the data. The remaining sections of this report describe the results from the tasks that were performed in greater detail.

SECTION 2

LITERATURE SEARCH

2.1 GENERAL

The first part of Task 1 was to expand the list of 30 engagements that were provided with the Statement of Work. SAIC added an additional 16 engagements that were felt to have potential for developing anti-tank actions. Table 2-1 shows the list of 46 engagements, the date of the engagement and the units involved. This list was used as the basis for the literature search.

The second part of Task 1 was to perform a literature search of both primary and secondary source material for all of the engagements that were defined. Table 2-2 shows the list provided with the Statement of Work that requested the minimum sources that must be surveyed. In addition to the data types listed in the table, SAIC found that combat interviews and monographs written during or shortly after the war were the most useful sources of data.

Initially, SAIC made telephone contact with the librarian/reference historian at each source location. The data collection objectives were discussed in context with the objective of the project and each source queried for potential data. Based upon these discussions, SAIC determined if a trip to the location was necessary in order to examine and collect data. The following is a summary of the literature research effort. A complete bibliography of records and data examined is found in Appendix C of this Volume.

TABLE 2-1. LIST OF ENGAGEMENTS FOR ASSESSMENT

ENGAGEMENT	LOCATION	DATE	UNIT(S) INVOLVED
1	Sbeitla, Tunisia	17 February 1943	601st TDBN; German: Elements of Group Stenkhoﬀ, 21st Panzer Division
2	Sbeitla, Tunisia	17 February 1943	2/13th Armored Rgmt and 27th AFA BN; German: Elements of Group Stenkhoﬀ, 21st PD
3	El Guettar, N. Africa	23 March 1943	601st TD Battalion; 899th TD Battalion; various BNs 16th and 18th Inf, 1st Div
4	Djebel el Guessa, N. Africa	6 December 1943	Battery C, 27th AFA Battalion
5	St. Jean-de-Daye, France	9 July 1944	Company C, 823d TD Battalion, attached to 30th Infantry Division
6		11 July 1944	823d Tank Destroyer Battalion; 39th and 47th Infantry Regiments
7	Notre Dame-de-Cenilly, France	29 July 1944	1 co. arm'd infantry, 1 tank co. of 41st Arm'd Infantry, Cmbt Cnd B, 2d Arm'd Div; German: Elements of 2nd SS PD, 17th SS Eng BN, 6th Parachute Rgmt, 17th SS PGD
8	Near #7	29 July 1944	1 co. from 4th Div infantry BN atch'd to 2d Arm'd Div, 78th AFA BN, 702rd TDBN
9	Near St. Denis-le-Gast, France	29 July 1944	Elements of same units as in Actions 7, 8
10	Hill 317, Mortain, France	7-12 August 1944	2/120th Infantry, 30th Division; Company K from 3/120th Infantry
11	Abbaye Blanche, France	7-12 August 1944	1st Platoon, Antitank Company, 120th Infantry
12	Arnaville, France	10 September 1944	Company C, 1/10th Infantry, 5th Infantry Division
13	Dieulouard Bridgehead, France	13 September 1944	Elements of 317th and 318th Infantry Regiments; 702d Tank BN; 313 Field Arty BN
14	Luneville, France	18 September 1944	42d Cavalry Squadron, 2d Cavalry Group, XII Corps
15	Schmidt, France	4 November 1944	Companies L and K, 3/112th Infantry, 28th Infantry Division
16	Kommerscheidt, Germany	4 November 1944	3/110th Infantry, 28th Infantry Division, and others
17	Distroff, Germany	15 November 1944	2/358th Infantry, 90th Infantry Div; 712th Tk BN and 773d TDBN; German: 25th PGD
18	Lucherberg, Germany	5 December 1944	Company F, 145th Infantry, 104th I.D.; German: 8th Rgmt, 3d Parachute Div
19	Murringen, Belgium	17 December 1944	Company E, 2/394th Infantry, 99th Infantry Division
20	Krinkeiter Wald, Belgium	17 December 1944	3/23d Infantry, 2d Infantry Division
21	Rocherath, Belgium	17 December 1944	1/9th Infantry 2d Infantry Division; with three guns from 644th TD Battalion
22	Dom Butgenbach, Belgium	19-22 December 1944	2/26th Infantry, 1st Infantry Div; 5th FA BN, 33d FA BN; 26th CBT; 634th TDBN
23	Hotton, Belgium	21 December 1944	51st Combat Engineer Battalion

TABLE 2-1. LIST OF ENGAGEMENTS (cont')

ENGAGEMENT	LOCATION	DATE	UNIT(S) INVOLVED
24	Stoumont, Belgium	20 December 1944	1/119th Infantry, 30th Infantry Division, + 1 tank company from 740th Tank Bn
25	Longchamps, Belgium	3 January 1945	2d Battalion, 502d Parachute Infantry, 101st Airborne Division; 81st AAA Bn
26	Longchamps, Belgium	4 January 1945	Elements of 101st Airborne Div; German: <u>104 Panzer Grenadier Rgmt, 15th PGD</u>
27	Butzdorf & Tettingen, Ger	18 January 1945	Elements of 94th Infantry Division; German: <u>11 Panzer Division</u>
28	Maison Rouge, France	24 January 1945	Company I, 3/15th Infantry, 3d Infantry Division
29	Bolsar, Germany	23-24 February 1945	406th Infantry Regiment, 102d Infantry Division; German: 363rd Infantry Division
30	Kirchboren, Germany	30 March 1945	"Task Force Richardson", 3d Armored Division
31	St. Barthelmy (Mortain)	6-11 August 1944	823d TD Battalion
32	Gela, Sicily	11 July 1943	1st ID, 2d AD, and 82d Abn
33	Salerno, Italy	13 September 1943	36th and 45th IDs
34	Anzio, Italy	16-17 Feb 1943	3d ID
35	Arnhem	9 December 1944	
36	Manhay Crossroads		7th AD, 82d AbnD
37	Baraque de Fraiture, Belg	23 December 1944	7th AD, 82d AbnD
38	Clervaux		28th ID
39	Marnach, Luxembourg	16 December 1944	28th ID
40	Rochefort, Belgium	23-24 December 1944	84th ID
41	Le Gleize		30th ID
42	Stavelot, Belgium	17-19 December 1944	30th ID
43	Battle of Five Points		
44	Hosingen, Germany		
45	Bastogne, France	January 1945	
46	Heinerscheid, Luxembourg	16-17 December 1944	

TABLE 2-2. SOURCE LOCATIONS AND TYPES SURVEYED

SOURCE LOCATIONS	
1.	National Archives and Record Service, Washington, DC
2.	Washington National Records Center, Suitland, MD
3.	US Army Center of Military History, Washington, DC
4.	US Army Military History Institute, Carlisle, PA
5.	US Military Academy (History Department Library), West Point, NY
6.	US Army Infantry Center and School, Ft. Benning, GA
7.	US Army Armor Center and School, Ft. Knox, KY
8.	US Army Artillery Center and School, Ft. Sill, OK
9.	US Army Combat Studies Institute, Ft. Leavenworth, KS
10.	US Air War College, Maxwell Air Force Base, AL
11.	US Army Combat Developments Experimentation Command, Fort Ord, CA
12.	German Archives, Washington, DC and Freiburg, Germany
SOURCE TYPES	
1.	Branch Journals
2.	Unit Histories
3.	Military Periodicals
4.	Individual and Unit Citations
5.	Morning Reports
6.	Histories (independently by historians)

2.2 POTENTIAL SOURCE DATA LOCATIONS

The Statement of Work requested that the sources listed in Table 2-2 be surveyed for data. The following subsections describe the findings at each of the locations and provide our assessment of their usefulness to this project.

2.2.1 National Archives and Record Service, Washington, DC

The National Archives in Washington contain German records from WWII. American records are found at Suitland, MD. German records were not globally surveyed for all engagements as the US records were. Because of the initial uncertainty in finding the data detail in the US records, no effort was place on researching German records until the engagements for the detailed combat action descriptions had been identified, based upon data availability in US records. At that time, the German records were researched only for those engagements.

German records available at the National Archives were reviewed for any German units participating in the engagements in the battle of Mortain. Even though records existed for these units, our search did not reveal any records for the time period of August 1944 for these units. Other records for this timeframe were too aggregated for the purposes of this project. However, our research did produce monographs written by captured German officers that provided information relevant to the battle of Mortain. These monographs included information such as number of tanks available at the German division level for the battle at Mortain, plus planned strategy for the German thrust. These monographs proved useful for corroboration of data found in American records and for background information. The monographs written in German were translated for use in this research effort.

2.2.2 Washington National Records Center, Suitland, MD

The points of contact at the Washington National Records Center in Suitland are Mr. Richard Boylan and Mr. Kevin Abing. Mr. Boylan provided a great deal of assistance to SAIC in locating war records pertaining to this study. Fairly complete records exist for the WWII Infantry, Armor and Airborne Divisions and for the Tank Destroyer Battalions (TDBN). In addition, remaining records from the former Tank Destroyer Command at Fort Hood are now at Suitland, although they

have not been catalogued. Files for Combat Interviews and Miscellaneous were also examined.

The division and TDBN records include an assortment of G-1, G-2, and G-3 Reports, S-2 and S-3 Reports, After Action Reports, Journals, General Orders, message files, maps and other miscellaneous records. These records are referenced by division, regiment, battalion, and occasionally company, depending upon what records survived and were given to the archives. Researchers found information of varying quality. Usually, the Infantry or Armor division records are informative as to location, weather conditions, terrain, the participants in the action, and the outcome, but specific data on anti-armor weapons are generally not found in these records. Anti-tank (AT) companies (supplemented with towed AT weapons) were organic to the Infantry segments, Armored Infantry Battalion and Tank Destroyer Battalions; but the Infantry division records found at the company level were for the infantry companies and seldom discussed the anti-tank companies.

The TDBN records were much better in providing the detail required for anti-tank actions. There was a varying degree of detail between battalion records. Some battalions provided much detail but others were very summary. The prioritization of the 47 engagements depended to a large degree on the records of the TDBNs involved in the engagement since better data can be found here.

Combat interviews are the other category of records which provide the best detail on anti-tank actions. The larger, more important, and later battles of WWII had fairly extensive interviews done. Good interviews appear to be available for the battles of the Ardennes and later. These generally have maps, details of weapons used, ammunition fired and kills.

2.2.3 US Army Center of Military History, Washington, DC

The Center of Military History (CMH) has holdings of manuscripts written by CMH on various WWII battles. Hannah Zeidlik, the reference librarian, assisted in locating review copies of the manuscript file. These manuscripts contained information that may be useful for collecting anti-armor data for the specific engagements they reference.

Also in the CMH Library are Unit histories, Tank Destroyer Battalion histories, the Green Books, and other secondary sources. These sources are useful in understanding the overall and background events of the actions, but did not contain specific information at the level of detail needed for this study.

2.2.4 US Army Military History Institute, Carlisle Barracks, Pennsylvania

SAIC visited the Military History Institute to examine any information there on tank destroyers. There is a special reference file the library has prepared on TDBNs. Much of the material is available at the Washington National Records Center, Suitland, MD; however, there are some historical unit data that were not found elsewhere. We obtained a copy of the file which might be useful to specific cases.

The Andrew Bruce papers were examined from which the booklet TD Combat in Tunisia was copied (Andrew Bruce was involved with tank destroyer ordnance during WWII and afterwards). This is probably the best source for battle at El Guettar, Africa. In addition, fourteen unnumbered boxes containing The George B. Jarrett Papers are located on the second floor in the archives. The collection has not yet been arranged, and most of the contents are in unlabeled folders. More than half of it is personal papers or clippings from published magazines and newspapers. Several boxes contain material of possible value to this project (the Bibliography in Appendix C gives more detail on these papers).

There were a small number of TDBN histories but few of these addressed the detail desired. The 607th, 811th, and 628th did have some, but these are also available at CMH in Washington.

2.2.5 US Military Academy, West Point, NY

SAIC contacted Mr. Hoss, Documents Librarian, and Ms. Dawn Crumpler, Special Collections. Neither of these librarians located any sources at the USMA library with the details required for this project.

2.2.6 US Army Infantry Center and School, Ft. Benning, GA

SAIC contacted Ms. Betty Van Sickle, the head librarian of the US Army Infantry Center at Ft. Benning, Georgia. Based upon her recommendation, SAIC spent two days at Ft. Benning surveying the information there. Mr. Charles White, the Infantry Center historian, assisted in locating secondary sources. SAIC also contacted the Director of the Infantry Center Museum, Mr. Dick Grube, however, the museum did not have any relevant information for this project.

The library has a card index file which is well organized to support this project. The subject files include both anti-tank and tank destroyers. There are also monograph files isolated in the card index drawers. In addition to published sources, the library has a number of official WWII reports from overseas which were briefly researched for valid information for this project. In general, these reports served as lessons learned and general observations rather than detailed descriptions of engagements.

The most valuable resource at the Infantry Center is the monograph collection. Apparently, from 1947 to 1950, officers in the advanced course were required to write monographs about their experiences during the war. While their quality varies, some of the monographs are very detailed and focus on units as small as platoons. The monographs frequently used the footnote "personal

knowledge" demonstrating that they included information which is unavailable elsewhere. Most of the monographs are still available as original documents, but all are available on microfilm.

2.2.7 US Army Armor Center and School, Ft. Knox, KY

SAIC contacted and visited Mr. William Hansen, Librarian, at the US Army Armor Center at Ft. Knox, Kentucky. The US Army Armor Center contains three types of records. The first and most numerous are published books which are of minimal value to the search for primary source material. Shelby Stanton's US Army Order of Battle in World War II has been used, however, as a guide to determine which tank destroyer battalions and groups to research further. These tank destroyer battalions and groups are listed by equipment type, i.e., towed 3" gun, M-10, M-18, M-36, etc. This source helped narrow the examination of sources by limiting the search to records of towed tank destroyer units (which was the proposed scope of this initial effort). The quarterly magazine, "After the Battle", was also used. While these articles have no bibliographies and cannot be used directly in this project, they provide background material to the reader who is unfamiliar with the larger scope of the small-scale engagements.

The second major asset of the Armor School Library is the collection of original records, including unit (down to battalion level) After Action Reports, battle experience analyses and contemporary concept studies. These were searched exhaustively for any information at the level of detail that this project requires. While very little of these data are detailed, they may be useful for corroboration or to close the gaps in data from other sources.

The third resource at the Armor School is the microfilm archives which also consist of primary document copies. These files were thoroughly reviewed for content pertinent to this project.

While at Ft. Knox, SAIC also visited the library of the Patton Museum of Armor and Cavalry, headed by Mr. David Holt. The museum library contains, almost

exclusively, data on armored hardware; that is, technical information on tanks and other armored vehicles, weapons specifications, etc. Little data of value to this project are available, but some pertinent background or supplementary data are available. The library contains the papers of COL R.J. Icks, a noted Ordnance historian.

2.2.8 US Army Artillery Center and School, Ft. Sill, OK

SAIC contacted Dr. Dastrup of the Historical Office and Ms. Relph, the librarian at the US Army Artillery Center and School in Ft. Sill, Oklahoma. Data at the level of detail required were not available, however, the Center did have some general tank destroyer information. In particular, a document on the 1948 Anti-tank Conference is available and can be borrowed through library channels.

2.2.9 US Army Combat Studies Institute, Ft. Leavenworth, KS

SAIC contacted Mr. John Rogers, Reference Librarian, and Ms. Tina Byers, Information Services. Neither individual believed that Leavenworth holdings could assist this project as any relevant information has been sent to Carlisle.

2.2.10 US Air War College, Maxwell Air Force Base, AL

SAIC contacted the assistant librarian at the US Air War College about relevant information for this project. The librarian confirmed that the Air War College has virtually no information of any specific anti-armor action relative to land forces in a defensive mode.

2.2.11 US Army Combat Developments Experimentation Command, Ft. Ord, CA

The assistant librarian at the US Army Combat Developments Experimentation Command was contacted by SAIC. No historical information relevant to this project was available.

2.2.12 German Archives

SAIC used one of our consultants in Germany, Dr. Arthur G. Volz, who reviewed his own extensive holdings and visited the Bibliothek fur Zeitgeschichte (Library for Contemporary History) and the Wurttembergische Landesbibliothek (Wurttemberg State Library) in Stuttgart. The Bibliothek fur Zeitgeschichte has an extensive and detailed subject catalog which covers periodical literature and sections of books as well as complete works. Dr. Volz located several secondary source books which pertained to the Mortain battle. SAIC received the tables of contents and bibliographies from these books for further evaluation.

After comparing the requirements of this project with the available material located in Germany, Dr. Volz was not optimistic of finding information at the level of detail from the German records required by this project. In the later periods of the war, the German records become more skimpy than at the beginning, for instance, in North Africa. However, the material he did identify was useful for background information and for cross checking some of the information found in the American records. For example, it is not uncommon for the American and German records to differ in recapping the events of an action. At Hill 314 in Mortain, the German records report that virtually all armored vehicles seem to have been APCs, with only four assault guns engaged; yet the American records state the Germans launched "another bitter attack with a large force of tanks."

2.2.13 The Pentagon Library, Washington, DC

The US Army Official History of World War II, the "Green Books", and a fairly complete set of Unit Histories are at the Pentagon Library. These books aided the researcher by providing background material for the engagements being researched.

2.3 PRIMARY SOURCES OF DATA

During the course of the literature search, the research team identified five different primary sources of data. The following is a summary of the usefulness of each source of information.

2.3.1 Division records

The Infantry and Armor Division Unit records at the Washington National Records Center in Suitland, MD contain much useful information. They include a variety of After Action Reports, Journals and Files, G-2 and G-3 Operational Summaries, Unit histories, S-2 and S-3 reports, plus other miscellaneous records of the Units involved in the engagements being researched. The Infantry and Armor Division Unit records were the first step in finding information at the level of detail required by this project.

2.3.2 TDBN Records

The TDBN records are a better source of the detailed data that is being sought for this project. These records are separately filed from the Infantry and Armor Division records. Our analysis determined that reliable and explicit data are not very plentiful in the records of American Army Units until after

mid-1943. This practically eliminates the North Africa Theater of Operations. In Italy, there were only a few cases of significant German tanks against the Allies, as the terrain constrained their use. German armor was massed against the Salerno and Anzio beachheads where the US seems to have successfully relied on air, and in particular, field artillery to ward off the German tanks. There were tank and anti-tank engagements, but researchers were unable to find detailed accounts. Most TDBN records in Italy show these units were used extensively as a supplement to field artillery although Anzio and Salerno did have some real direct-fire anti-tank action. However, there will be problems in separating effects of TDBN actions from those of Allied armor and artillery. Also at Anzio, the presence of British forces in close proximity to the those of the US may prevent identifying results from distinctively US unit efforts.

It is largely in the Western European Theater of Operations (ETO) that American records and a few significant German armored offensives (mostly counterattacks) combine to provide the best data for this project. Even here, it will be mostly during the latter half of 1944 and the first two months of 1945 when the Germans still have the armor to use in such endeavors against the US Army. German records start to lose their reliability after the Allied breakout from Normandy in July of 1944.

In reviewing the full scope of the TDBN files, certain patterns were discernable. Unit whose records were journals and had many map overlays were generally employed as field artillery battalions. Units entering France from the South (Operation DRAGON) encountered very little German armor, even when they fought in Alsace. Of the 64 TDBNs in the European Theater of Operation, the better records are from the 601, 607, 609, 614, 701, 702, 703, 805, 823, and 899th TDBNs. Engagements which involved these units have the best probability of detailed data availability.

2.3.3 Combat Interviews

The combat interviews were the result of efforts by SLA Marshall's team of historians at the Headquarters, European Theater of Operations. After

engagements, members of the team interviewed participants down to the level of private soldier and sometimes produced detailed overlays of the combat actions. The combat interviews have proved to be the best source of information for the type of data required by this project.

There are 330 combat interviews at Suitland. The files are broadly organized by Infantry and Armored Divisions and Cavalry Groups. They are further sub-divided into particular campaigns and events the historian interviewers considered worth examining. Many good interviews concerning the Ardennes, Dec 1944-Jan 1945, anti-tank actions exist in these files. The very nature of the German armor-supported breakthrough make this period ideal for this project. Some of the combat interviews examined do suggest other periods to examine, especially for the time between the Normandy breakout, in July 1944, to Mortain in early August 1944; and again after Mortain through late September 1944.

2.3.4 Monographs

The monograph collection located at Ft. Benning, GA appears to be a valuable resource. These are very similar to the combat interviews in the level of detail available. This source should be surveyed for each engagement.

2.3.5 Oral Interviews

SAIC established contact with veterans of the 823rd TDBN who supported the 30th Infantry Division at Mortain. Our initial access to these men was courtesy of the Tank Destroyer Association and its local representative, COL (Ret) Quintus Atkinson. Four veterans agreed to provide oral histories based upon their experience and recollection. These interviews proved to be an excellent source of information, both for confirming and adding to the written record data that had been collected. Although the war ended 45 years ago, they still had vivid memories of events that have never been recorded. On occasion, the interviews served to correct official reports on such data as gun positions and were also able to fill in details that were not recorded.

2.4 SECONDARY SOURCES OF DATA

2.4.1 Unit Histories

Unit histories, located at the US Army Pentagon Library, US Army Center of Military History, and the Washington National Records Center were used to initially research each engagement prior to searching the official records in the archives. It was necessary to have a basic understanding of the engagement as well as know what units were involved. The Unit histories also provide additional references where the detailed data required may be found.

2.4.2 The US Army's Official History of World War II

Known as the Green Books, this history provides background information useful in researching a particular World War II engagement. These books also reference other sources such as manuscripts which frequently contain detailed information.

2.5 SUMMARY OF FINDINGS FROM LITERATURE SEARCH

Several items became evident during the literature search task. These are:

- German records (and British records) are very good in the earlier parts of the war, particularly in North Africa. However, American records are very skimpy or scarce during that time. American records become much more useful during the latter stages of the war (1944-1945) with a corresponding decline in the amount of detailed information found in the German records. It is surmised that the American system of recording history was not well established in the beginning and little survives from the North African tank campaigns. Post-Italian battle records are much better for American forces, partly due to a better system and partly due to the fact that there were more periods of time when records could be prepared. However, many of the German records in the North Europe engagements were lost or not well documented because the Germans were on the run

during the last years of the war. This makes for an inequity between data available for friendly and enemy forces for a given engagement.

- Combat interviews were the most consistent source for the detailed data that was required. Those engagements for which combat interviews were done or monographs prepared by participants are the most likely to have the detail required for the anti-tank actions.
- The scope of this effort concentrated on towed US anti-tank weapons against German tanks. From our research, it appears that the US forces found self-propelled anti-tank weapons more effective (North Africa being an exception and, unfortunately, without a well documented example). There should be no problem in collecting data on self-propelled TDBNs. There also appears to be a few well documented examples in the Infantry records of men with bazookas against tanks .

SECTION 3

EVALUATION OF DATA AVAILABILITY AND PRIORITIZATION OF ENGAGEMENTS

3.1. GENERAL

The final step in Task 1 was to evaluate data availability and prioritize the results. In order to reduce the risk and optimize the chances of acquiring a significant number of anti-tank actions, the findings from the literature search were used to assess and prioritize the 46 engagements identified in Section 2. The results of the evaluation determined which engagements have the most potential for developing detailed combat actions.

3.2 ASSESSMENT METHODOLOGY

The evaluation was based on a five step assessment methodology designed to take subjective assessments of data and quantify them in order to rank the engagement choices. The five step assessment is described below:

- Step 1. A list of 46 engagements offering the potential for successful data collection were developed based selected criteria that:
- Thirty of the engagements came from the initial feasibility list that CMH provided
 - The engagement included American anti-tank defensive action
 - The engagement could potentially provide complete, factually accurate, and reliable quantitative historical combat data that can be used with confidence to evaluate the degradation of anti-armor weapons effectiveness in a combat situation
- Step 2. The goal of step 2 was to establish an initial bibliography and determine an order of battle (OB). If primary or reputable secondary

sources were insufficient to meet the data collection objectives (at a minimum, those considered as primary data elements shown in Table 1-2 in Section 1) or the OB could not be determined, the engagement would be eliminated from further consideration. During this step the list was reduced to 34 engagements.

Step 3. The availability of data was assessed for each unit in the OBs for each engagement. The results were scored for each engagement in each of six data categories:

- a. Data Availability
- b. Determination of Weapon Effectiveness
- c. Level of Detail
- d. Ability to Isolate the Action
- e. Ability to Justify Estimates
- f. Location of Sources

Points were assigned as follows:

- a. Data Availability -- The data collection objectives are listed in Table 3-1. Each data collection objective was assigned a point value.

TABLE 3-1. DATA COLLECTION OBJECTIVES

PRIMARY	SECONDARY	TERTIARY
Disposition of defensive weapons/location relative to attack	Artillery bombardment	Type of attack maneuver
Strength of US Infantry	Obstacles	Quality of defensive preparation
Size and activity of infantry with armor attack	Meteorological data	Extent of warning and intelligence
No. and type of AT weapon in visual contact with the enemy	Time of day	Air/Artillery support and suppression
No. of enemy tanks, armor SP guns	Terrain	Overwatching vs. maneuvering tanks
US tanks present	Maximum operational effectiveness range	Supply of on-hand ammunition
Casualties (personnel)	Rounds fired by type	
No. and type of tank, SP gun casualties (enemy)	Maps	
Narrative		

Primary objectives had a value of 3, secondary objectives had a value of 2 and tertiary objectives were given a value of 1. If the researcher felt that the data objective could be found, the corresponding value was assigned. If the data objective could not be found then the data objective was given a zero. The data objectives were grouped for ease in identifying them in the records. The maximum number of points which could be assigned for data availability was 56.

Weather:	Obstacles	2	Tactics:	Arty bombdmt	2	
	Meteorological	2		Atk maneuver	1	
	Time of Day	2		Prep def site	1	
	Light	2		Atk warning	1	
	Terrain	2		Max effect rng	2	
Composition:	US	1		Atk air, arty	1	
	German	1		Ovrwch vs	1	
				Maneuw tks		
Disposition:	Defen Weapons	3	Logistics:	Ammo supply	1	
				Rds fired by	2	
Strength:	US	3	Results:	wpn type		
	German	3		US casualties	3	
	Ger Inf w/attk	3		Enemy tks lost	3	
	US AT weapons	3		Narrative	1	
	Ger tanks	3	Resource Data:	Maps	2	
	US tanks	3				

Maximum total points = 56

b. Presence of Weapon Effectiveness Data -- Since the final objective of this project is to provide data to evaluate weapon degradation, data collected must be able to support such analyses. As part of the literature search, data were evaluated as to how discrete the weapon/target data were, i.e., individual weapon on target, individual weapon on target group, weapon group on target or some higher level of aggregation. The following scores were given:

Excellent data for individual weapon	40
Fair amount of data for individual weapon	20
Cannot determine by individual weapon	10
Cannot determine for any weapon	0

c. Level of Organizational Record -- Because of the data detail required, higher organization level records were generally too aggregated to be of great use. The kind of detail required usually was found when lower level organization records existed. The following scores were given:

Company/Platoon	40
Battalion	35
Brigade/Regiment	25
Division	10
Army/Corps	5

d. Ability to Isolate Combat Action/Engagement -- This criterion measures how satisfactorily combat actions can be isolated from other actions.

Can Isolate	40
Must Use Judgment/Estimate	20
Cannot Isolate	0

e. Ability to Justify Estimates -- This criterion is intended to measure the ability to justify any approximations or estimates made, e.g. estimation of maximum effective range (if not stated in the records).

No Estimation Needed	40
Easily Justifiable	20
Justify with Difficulty	10
Cannot Estimate	0

f. Location of Sources -- This criterion has been established to provide a relative measure of the resources - time, people, and money - needed to collect the required data for a particular research case.

Local Washington	20
Carlisle	15
Eastern Seaboard	10
Other US	5
Germany	2

Step 4. The next step was to weight the data categories depending upon importance. Data availability was the primary evaluation criteria and received half the total weight. The other criteria were used to assist in rank ordering the engagements at a lesser level. The weights used are as follows:

Data availability	0.50
Determination of Weapon Effectiveness	0.15
Level of Data/Detail	0.10
Ability to Isolate Combat Action	0.10
Ability to Justify Estimates	0.10
Location of Sources	0.05

For each engagement, the score by category achieved in step 3 was multiplied by the corresponding weight and summed to give a total weighted value for each engagement. The scores for each engagement are provided in Appendix E to this volume. Table 3-2 gives the final ordering of the engagements based on the weighted total score.

TABLE 3-2. ORDERING OF ENGAGEMENTS

NO.	ENGAGEMENT	WEIGHTED SCORE
1	Dom Butgenbach, Belgium (22)**	40
2	St. Barthelmy, France (31)	39
3	L'Abbaye Blanche, France (11)	39
4	Krinkelter Wald, Belgium (20)	38.5
5	Rocherath, Belgium (21)	38
6	Maison Rouge, France (28)	36
7	Hill 314, Mortain, France (10)	36
8	Stoumont, Belgium (24)	36
9	Kommerscheidt, Germany (16)	34.5
10	Hosingen, Germany (44)	34.5
11	Bastogne (45)	34
12	Heinerscheid, Luxembourg (46)	34
13	Baraque de Fraiture (37)	34
14	Stavelot (42)	33
15	Manhay Crossroads (36)	33
16	Schmidt, France (15)	33
17	Battle of Five Points, France (43)	31.5
18	Longchamps, Belgium (25)	29
19	Longchamps, Belgium (26)	29
20	Butzdorf and Tettingen (27)	29
21	Anzio, Italy (34)	27
22	Arnaville, France (12)	27
23	Notre Dame-de-Cenilly, France (7)	26
24	Near #7 (8)	26
25	Salerno, Italy (33)	25
26	Bolsar, Germany (29)	22
27	Le Gleize (41)	22
28	Luneville, France (14)	21
29	Dieulouard Bridgehead, France (13)	20
30	Near St. Denis-le-Gast, France (9)	19
31	Distroff, Germany (17)	18
32	Lucherberg, Germany (18)	16
33	Kirchboren, Germany (30)	16
34	El Guettar, North Africa (3)	12
35	Hotton, Belgium (23)	10.5
36	Sbeitla, Tunisia (1)	7.5
37	Sbeitla, Tunisia (2)	7.5
38	Djebel El Guessa, North Africa (4)	5
39	St. Jean-de-Daye, France (5)	5
40	St. Jean-de-Daye, France (6)	5
41	Murringen, Belgium (19)	5
42	Gela, Sicily (32)	2
43	Arnhem (35)	2
44	Clervaux (38)	2
45	Marnach (39)	2
46	Rocheftort (40)	2
**	Number in () indicates original engagement number	

Step 5. The last step in the process was to recommend which engagements to pursue. Engagements 35 to 46 were recommended for deletion. Although there were tank actions in these engagements, available records do not support the data requirements. Engagements 1 through 17 were recommended as the top engagements to pursue. Engagements 18 through 34 were considered as secondary, back-up engagements if any of the top 17 failed for any reason in the detailed data search. Engagement 34, El Guettar, was included because of a slim chance of finding some anti-tank action data in North Africa. Although the data appears sparse, this is the best of the North African engagements in terms of detailed data surviving.

There is a minimum "one action per one engagement" implied in the list of 34 engagements. In reality, there is probably a "N action per one engagement" when the detailed data search is performed. Therefore this list will provide a high probability of collecting data for 100 actions.

These recommendations were presented to the US Army Concepts Analysis Agency Review Board in December, 1989 and were accepted without change.

3.3 SUMMARY OF ENGAGEMENT EVALUATION

Because of separate data collection work being done on the WWII Ardennes Campaign, the Government decided not to pursue Dom Butgenbach, engagement ranked number 1, for detailed data collection and feasibility at this time. Therefore, St. Barthelmy, engagement number 2 and part of the Mortain battle, was selected as the engagement to pursue in detail.

Engagements ranked 35 to 46 were recommended for deletion because virtually no information exists at the level of detail required. Little detailed information was kept during the North African engagements and records for the

others in North Europe did not survive, primarily because the units were overrun and the records burned.

El Guettar, number 34, was kept on the list because it was the only North African engagement that has any potential of developing some data from. The remainder of the list should generate a minimum of 34 anti-tank combat actions.

SECTION 4

DATA COLLECTION PLANS

4.1 GENERAL

Task 2 required that SAIC prepare a series of data collection plans for the top 10 engagements. The data collection plans outline the course of action to follow when performing the detailed data search for each engagement. Data are required to be collected from all available sources. Primary or original data sources will be consulted first in all cases, and final results will be based chiefly on a careful analysis of them. Final results will make essential use of secondary or other non-primary sources only when a careful search of the primary sources fails to turn up critically needed information.

Any appropriate contingency arrangements are found in either the task assignments section or the schedules. In some cases, contingencies and backups do not exist either because none are necessary or none have been defined at this point in the research.

The data collection plans are efficient in the sense of minimizing the expected cost to obtain the necessary data. In addition, the engagements have been grouped so that data collection is more efficient. SAIC found in Phase I that the data collection could be done on all Mortain engagements at the same time within the same resources that it took to do St. Barthelmy alone. The assumption that certain engagements will be done concurrently has been built into the time and personnel estimates for certain engagements.

The time and personnel stated in each data collection plan is the estimate to do that engagement only. The sum of hours and personnel of all plans indicates the total effort required to do all ten engagements. However, the plans were developed with the assumption that some engagements would be done concurrently to utilize the efficiency of data collection.

4.2 DOM BUTGENBACH, BELGIUM

a. GENERAL DESCRIPTION OF ENGAGEMENT. This engagement took place from the 19th through the 22nd of December, 1944. The units involved were:

- o 2/26th Infantry, 1st Infantry Division
- o 5th Field Artillery Battalion
- o 33d Field Artillery Battalion (also 1st Infantry Division)
- o 634th Tank Destroyer Battalion
- o other elements from the 26th Combat Team.
- o German: 25th Panzer Grenadier Regiment, 12th SS Panzer Regiment,
12 SS Panzer Division

About three hours before dawn, 21 December 1944, German artillery began firing against the American front line, and continued until dawn. As Germans began to advance after dawn, American FOs called on "at least" ten battalions of artillery for defensive box barrages, which "succeeded in discouraging the German infantry." German armor attacked the battalion's right, "searching out the automatic weapons which had earlier helped check the infantry assault ... the BAR and machine gun crews were wiped out." German armor moved through "this gaping hole" and headed for Dom Butgenbach. A Self-Propelled Tank Destroyer (634th Tank Destroyer Battalion) "accounted for seven tanks," and Sherman tanks accounted for two more, before being knocked out. Infantry 57mm anti-tank guns also played a significant role. Three German tanks succeeded in entering the village. Two were eventually destroyed by recently arrived 90mm TDs, while the third escaped. Artillery received greatest credit for repelling the attack. Estimate is that over 10,000 rounds of artillery were fired in an 8 hour period.

References: CMH identified engagement; Cole, The Ardennes, 129 ff. (esp. 131-133; CPT D. Rivette, "The Hot Corner At Dom Butgenbach", Infantry Journal (October 1945): 19-23.

b. COMMENTS FOR RESEARCHERS. An initial attempt should be made to see if CPT D. Rivette can still be contacted. Also, try to tap into the 1st ID and 634th TDBN Associations to identify any appropriate veterans willing to be interviewed.

c. SCHEDULE FOR DATA COLLECTION.

TABLE 4-1. MILESTONE SCHEDULE FOR DATA COLLECTION ON DOM BUTGENBACH, BELGIUM

TASKS	MONTHS						EFFORT	
	1ST	2ND	3RD	4TH	5TH	6TH	PEOPLE	HRS*
1. RESEARCH BACKGROUND INFORMATION TO UNDERSTAND EVENTS OF THE ACTION.	■						1	24
2. OBTAIN PERTINENT DATA FROM THE NATIONAL RECORDS CENTER IN SUITLAND, MD, CENTER OF MILITARY HISTORY (CMH), AND THE INFANTRY SCHOOL LIBRARY, FT. BENNING, GA.	■						2	120
3. CONTINUE RESEARCH AT THE NATIONAL ARCHIVES, WASHINGTON, D.C. AND FRIEBURG, GERMANY TO FIND ANY RECORDS AVAILABLE OF GERMAN SIDE.		■					2	60
4. PREPARE BIBLIOGRAPHY OF SOURCES USED IN RESEARCH EFFORT.	■						1	80
5. ADD DATA TO FILING SYSTEM AND DATABASE.			■				1	80
6. ANALYZE COLLECTED DATA AND ORGANIZE SPECIFIC ACTIONS SUITABLE FOR DETAILED DESCRIPTION TO INCLUDE PREPARATION OF MAP-SCHEMATIC.			■				2	160
LEGEND: * TOTAL HOURS ■ DATA COLLECTION ■ DATA ORGANIZATION								

d. REQUIRED PERSONNEL.

Senior Analyst	Direct data collection, primary writer
Junior Analyst (2)	Data collection, data base and file management
Military Historian	Assist in data collection, advisory capacity in description and analysis

e. TASK ASSIGNMENTS FOR DATA COLLECTION.

1. Obtain background information on the units involved to follow the events of the action.
2. Obtain data from the National Records Center in Suitland, MD, manuscripts from the Center of Military History, and monographs from the Infantry School Library in Ft. Benning, GA.

3. Continue research at the National Archives in Washington, D.C. to find information on the German units involved in the action.
4. Prepare bibliography of sources used in research effort.
5. Add data to filing system and database.
6. Analyze collected data and organize specific actions suitable for detailed description to include preparation of map-schematic.

f. PRELIMINARY BIBLIOGRAPHY.

PRIMARY SOURCES

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_____. "Attack and Penetration," 16-21 December 1944 Dom Butgenbach, Belgium, Historical Manuscript File.

G-3 Operations Report for December 1944, "Restoration and Defense of the Butgenbach-Weywertz-Weimes Sector," [Box 5763 1st Infantry Division 301-3 November to December 1944].

Monograph, "The Operations of the 2d Battalion, 26th Infantry (1st Infantry Division) at Dom Butgenbach, Belgium, 16-21 December 1944" (Ardennes Campaign - Personal Experience of an Anti-tank Company Commander) Captain Donald E. Rivette, Infantry.

Monograph, "The Operations of the 2d Battalion, 26th Infantry (1st US Infantry Division) at Dom Butgenbach, Belgium 18-21 December 1944" (Ardennes Campaign - Personal Experience of a Battalion Operations Officer) Major Thomas J. Gendron.

Rivette, Donald E., Infantry Journal, "The Hot Corner at Dom Butgenbach," Vol LVII, No. 4, October 1945, pg. 19-23.

"Unit Journal," 26th Infantry Regiment, [Box 5956 26th Infantry Regiment, 1st Infantry Division 301-INF(26)-0.3 December 1944 to February 1945].

"Summary of Butgenbach Battle," [Box 24012 1st Infantry Division Combat Interview]

SECONDARY SOURCES

Cole, Hugh, M., The Ardennes: Battle of the Bulge, pg. 128-135.

4.3. ST. BARTHELMY, FRANCE

a. GENERAL DESCRIPTION OF ENGAGEMENT. This engagement took place from the 7th through the 12th of August, 1944. The units involved were:

- o 1st BN, 117th Infantry Regiment, 30th Infantry Division
- o 823rd TDBN
- o German: 2nd Panzer Division

Shortly after midnight on the morning of August 7, tanks and infantry of the 2d Panzer Division attacked St. Barthelmy as part of the Mortain counterattack. St. Barthelmy was defended by 1st Battalion, 117th Infantry Regiment with 'B' Company, 823d Tank Destroyer Battalion in support. The initial German thrust lasted until approximately noon of August 7. Both 1st Battalion, 117th Infantry Regiment, and 'B' Company, 823d Tank Destroyer Battalion suffered heavy losses of men and equipment, however, they did succeed in damaging or destroying approximately thirty of fifty tanks and significantly delaying the 2d Panzer Division's progress.

b. COMMENTS FOR RESEARCHERS. None.

c. SCHEDULE FOR DATA COLLECTION.

TABLE 4-2. MILESTONE SCHEDULE FOR DATA COLLECTION ON ST. BARTHELMY, FRANCE

TASKS	MONTHS						EFFORT	
	1ST	2ND	3RD	4TH	5TH	6TH	PEOPLE	HRS*
1. RESEARCH BACKGROUND INFORMATION TO UNDERSTAND EVENTS OF THE ACTION	■						1	24
2. OBTAIN PERTINENT DATA FROM THE NATIONAL RECORDS CENTER IN SUITLAND, MD, USMHI IN CARLISLE, PA, AND THE INFANTRY SCHOOL IN FT. BENNING, GA	■						2	120
3. CONTINUE RESEARCH AT THE NATIONAL ARCHIVES, WASHINGTON, D.C. AND FRIEBURG, GERMANY TO FIND RECORDS ON GERMAN SIDE OF THE ACTION.		■					2	60
4. PREPARE BIBLIOGRAPHY OF SOURCES USED IN RESEARCH EFFORT.	■						1	80
5. ADD DATA TO FILING SYSTEM AND DATABASE.			■				1	80
6. CONDUCT ORAL INTERVIEWS WITH WWII VETERANS TO FILL HOLES IN DATA.				■			1	24
7. ANALYZE COLLECTED DATA AND ORGANIZE SPECIFIC ACTIONS SUITABLE FOR DETAILED DESCRIPTION TO INCLUDE PREPARATION OF MAP-SCHEMATIC.			■				2	160
LEGEND: * TOTAL HOURS ■ DATA COLLECTION ■ DATA ORGANIZATION								

d. REQUIRED PERSONNEL.

Senior Analyst	Direct data collection, primary writer
Junior Analyst (2)	Data collection, data base and file management
Military Historian	Assist in data collection, advisory capacity in description and analysis

e TASK ASSIGNMENTS FOR DATA COLLECTION.

1. Obtain background information on the units involved to follow the events of the action.
2. Obtain data from the National Records Center in Suitland, MD, the US Military History Institute in Carlisle, PA, and the Infantry School Library in Ft. Benning, GA.
3. Continue research at the National Archives in Washington, D.C. to find information on the German units involved in the action.
4. Prepare bibliography of sources used in research.
5. Add data to filing system and database.
6. Conduct oral interviews with World War II veterans to fill holes in data.
7. Analyze collected data and organize specific actions suitable for detailed description to include preparation of map-schematic.

f. PRELIMINARY BIBLIOGRAPHY.

PRIMARY SOURCES

- "Combat Interviews, 30th Infantry Division, Mortain," [RG 407, National Archives, Suitland, MD].
- "G-2 and G-3 Journal and Files, 30th Infantry Division, 6-10 August 1944," [RG 407, National Archives, Suitland, MD].
- "G-2 and G-3 After Action Report, 30th Infantry Division, 6-10 August 1944," [RG 407, National Archives, Suitland, MD].
- "S-2 and S-3 Journal and Files, 117th Infantry Regiment, 6-10 August 1944," [RG 407, National Archives, Suitland, MD].
- "S-2 and S-3 After Action Report, 117th Infantry Regiment, 6-10 August 1944," [RG 407, National Archives, Suitland, MD].
- "S-2 and S-3 Journal and Files, 118th Field Artillery Battalion, 6-10 August

1944," [RG 407, National Archives, Suitland, MD].

"S-2 and S-3 After Action Report, 118th Field Artillery Battalion, 6-10 August 1944," [RG 407, National Archives, Suitland, MD].

"S-2 and S-3 Journal and Files, 113th Field Artillery Battalion, 6-10 August 1944," [RG 407, National Archives, Suitland, MD].

"S-2 and S-3 After Action Report, 113th Field Artillery Battalion, 6-10 August 1944," [RG 407, National Archives, Suitland, MD].

"S-2 and S-3 Journal and Files, 197th Field Artillery Battalion, 6-10 August 1944," [RG 407, National Archives, Suitland, MD].

"S-2 and S-3 After Action Report, 197th Field Artillery Battalion, 6-10 August 1944," [RG 407, National Archives, Suitland, MD].

"S-2 and S-3 Journal and Files, 230th Field Artillery Battalion, 6-10 August 1944," [RG 407, National Archives, Suitland, MD].

"S-2 and S-3 After Action Report, 230th Field Artillery Battalion, 6-10 August 1944," [RG 407, National Archives, Suitland, MD. Map, Mortain sheet No. 34/10 N.E. 1:25,000].

"S-2 and S-3 Journal and Files, 823d Tank Destroyer Battalion, August 1944," [RG 407, National Archives, Suitland, MD].

"S-2 and S-3 After Action Report, 838th Tank Destroyer Battalion, August 1944," [RG 407, National Archives, Suitland, MD].

SECONDARY SOURCES

Blumenson, Martin, Breakout and Pursuit (Washington, DC: OCMH, 1961).

Committee 24, Employment of Four Tank Destroyer Battalions in the ETO. (Fort Knox, May 1950).

Hewitt, Robert L., Workhorse of the Western Front: The Story of the 30th Infantry Division (Washington: The Infantry Journal Press, 1946).

823d Tank Destroyer Battalion, A History of the 823d Tank Destroyer Battalion (1951).

4.4. ABBAYE BLANCHE, FRANCE

a. GENERAL DESCRIPTION OF ENGAGEMENT. This engagement took place from the 7th through the 12th of August, 1944. It was primarily a tank destroyer engagement reinforced by elements of the 30th Infantry Division. The units involved were:

- o 1st Platoon, Antitank Company, 120th Infantry Regiment

The unit maintained a roadblock northwest of Mortain during the German counterattack. The roadblock has been credited with between forty and sixty German vehicles and tanks killed.

References: CMH identified engagement; Blumenson, Breakout and Pursuit, 469-75, 488-90; Hewitt, Workhorse of the Western Front: History of the 120th Infantry Regiment.

b. SCHEDULE FOR DATA COLLECTION.

TABLE 4-3. MILESTONE SCHEDULE FOR DATA COLLECTION ON ABBAYE BLANCHE, FRANCE

TASKS	MONTHS						EFFORT	
	1ST	2ND	3RD	4TH	5TH	6TH	PEOPLE	HRS*
1. RESEARCH BACKGROUND INFORMATION TO UNDERSTAND EVENTS OF THE ACTION.	■						1	24
2. OBTAIN PERTINENT DATA FROM THE NATIONAL RECORDS CENTER IN SUITLAND, MD, CENTER OF MILITARY HISTORY (CMH), AND THE INFANTRY SCHOOL LIBRARY, FT. BENNING, GA.	■						2	120
3. CONTINUE RESEARCH AT THE NATIONAL ARCHIVES, WASHINGTON, D.C. TO FIND RECORDS ON THE GERMAN SIDE OF THE ACTION.		■					2	60
4. PREPARE BIBLIOGRAPHY OF SOURCES USED IN RESEARCH EFFORT.	■						1	80
5. ADD DATA TO FILING SYSTEM AND DATABASE.			■				1	80
6. CONDUCT ORAL INTERVIEWS WITH WWII VETERANS TO FILL HOLES IN DATA.				■			1	24
7. ANALYZE COLLECTED DATA AND ORGANIZE SPECIFIC ACTIONS SUITABLE FOR DETAILED DESCRIPTION TO INCLUDE PREPARATION OF MAP-SCHEMATIC.			■				2	160
LEGEND: * TOTAL HOURS ■ DATA COLLECTION ■ DATA ORGANIZATION								

NOTE: Data for engagements 2, 3, and 7 will be collected simultaneously, therefore, the level of effort for data collection will not be as extensive.

c. REQUIRED PERSONNEL.

Senior Analyst	Direct data collection, primary writer
Junior Analyst (2)	Data collection, data base and file management
Military Historian	Assist in data collection, advisory capacity in description and analysis

d. TASK ASSIGNMENTS FOR DATA COLLECTION.

1. Obtain background information on the units involved to follow the events of the action.
2. Obtain data from the National Records Center in Suitland, MD, manuscripts from the Center of Military History, and monographs from the Infantry School Library in Ft. Benning, GA.
3. Continue research at the National Archives in Washington, D.C. to find information on the German units involved in the action.
4. Prepare bibliography of sources used in research effort.
5. Add data to filing system and database.
6. Conduct oral interviews with World War II veterans to fill holes in the data.
7. Analyze collected data and organize specific actions suitable for detailed description to include preparation of map-schematic.

e. PRELIMINARY BIBLIOGRAPHY.

PRIMARY SOURCES

"Combat Interviews, 30th Infantry Division, Mortain", [RG 407, National Archives, Suitland, MD].

"G-2 and G-3 Journal and Files, 30th Infantry Division, 6-10 August 1944," [RG 407, National Archives, Suitland, MD].

"G-2 and G-3 After Action Report, 30th Infantry Division, 6-10 August 1944," [RG 407, National Archives, Suitland, MD].

"S-2 and S-3 Journal and Files, 120th Infantry Regiment, 6-10 August 1944," [RG 407, National Archives, Suitland, MD].

"S-2 and S-3 After Action Report, 120th Infantry Regiment, 6-10 August 1944,"

[RG 407, National Archives, Suitland, MD].

"S-2 and S-3 Journal and Files, 118th Field Artillery Battalion, 6-10 August 1944," [RG 407, National Archives, Suitland, MD].

"S-2 and S-3 After Action Report, 118th Field Artillery Battalion, 6-10 August 1944," [RG 407, National Archives, Suitland, MD].

"S-2 and S-3 Journal and Files, 113th Field Artillery Battalion, 6-10 August 1944," [RG 407, National Archives, Suitland, MD].

"S-2 and S-3 After Action Report, 113th Field Artillery Battalion, 6-10 August 1944," [RG 407, National Archives, Suitland, MD].

"S-2 and S-3 Journal and Files, 197th Field Artillery Battalion, 6-10 August 1944," [RG 407, National Archives, Suitland, MD].

"S-2 and S-3 After Action Report, 197th Field Artillery Battalion, 6-10 August 1944," [RG 407, National Archives, Suitland, MD].

"S-2 and S-3 Journal and Files, 230th Field Artillery Battalion, 6-10 August 1944," [RG 407, National Archives, Suitland, MD].

"S-2 and S-3 After Action Report, 230th Field Artillery Battalion, 6-10 August 1944," [RG 407, National Archives, Suitland, MD. Map, Mortain sheet No. 34/10 N.E. 1:25,000].

"S-2 and S-3 Journal and Files, 823d Tank Destroyer Battalion, August 1944," [RG 407, National Archives, Suitland, MD].

"S-2 and S-3 After Action Report, 838th Tank Destroyer Battalion, August 1944," [RG 407, National Archives, Suitland, MD].

SECONDARY SOURCES

Blumenson, Martin, Breakout and Pursuit (Washington, DC: OCMH, 1961).

Committee 24, Employment of Four Tank Destroyer Battalions in the ETO. (Fort Knox, May 1950).

Hewitt, Robert L., Workhorse of the Western Front: The Story of the 30th Infantry Division (Washington: The Infantry Journal Press, 1946).

823d Tank Destroyer Battalion, A History of the 823d Tank Destroyer Battalion (1951).

4.5 KRINKELTER, BELGIUM

a. GENERAL DESCRIPTION OF ENGAGEMENT. This engagement took place on the 17th of December, 1944. The units involved were:

o 3/23d infantry, 2d Infantry Division

The 3d Battalion was in line with 1/393d Infantry. German tanks and infantry attacked Company I, on the open left flank, which "went to pieces" after expending its ammunition and trying to withdraw. Company K was then attacked, but withdrew successfully, with the exception of one platoon which was destroyed. Two U.S. tanks moved forward to a crossroad near Company K position. Both were knocked out, as were two German tanks. Company L conducted an orderly withdrawal.

References: CMH identified engagement; Cole, Ardennes, 99-100.

c. SCHEDULE FOR DATA COLLECTION.

TABLE 4-4. MILESTONE SCHEDULE FOR DATA COLLECTION ON KRINKELTER, BELGIUM

TASKS	MONTHS						EFFORT	
	1ST	2ND	3RD	4TH	5TH	6TH	PEOPLE	HRS*
1. RESEARCH BACKGROUND INFORMATION TO UNDERSTAND EVENTS OF THE ACTION.	■						1	24
2. OBTAIN PERTINENT DATA FROM THE NATIONAL RECORDS CENTER IN SUITLAND, MD, AND THE CENTER OF MILITARY HISTORY (CMH)	■						2	120
3. CONTINUE RESEARCH AT THE NATIONAL ARCHIVES, WASHINGTON, D.C. TO FIND RECORDS ON THE GERMAN SIDE OF THE ACTION.		■					2	60
4. PREPARE BIBLIOGRAPHY OF SOURCES USED IN RESEARCH EFFORT.	■						1	80
5. ADD DATA TO FILING SYSTEM AND DATABASE.			■				1	80
6. ANALYZE COLLECTED DATA AND ORGANIZE SPECIFIC ACTIONS SUITABLE FOR DETAILED DESCRIPTION TO INCLUDE PREPARATION OF MAP-SCHEMATIC.			■				2	160
LEGEND: * TOTAL HOURS ■ DATA COLLECTION ■ DATA ORGANIZATION								

NOTE: Data for engagements 1, 4, and 5 will be collected simultaneously, therefore, the level of effort for data collection will not be as extensive.

d. REQUIRED PERSONNEL.

Senior Analyst	Direct data collection, primary writer
Junior Analyst (2)	Data collection, data base and file management
Military Historian	Assist in data collection, advisory capacity in description and analysis

e. TASK ASSIGNMENTS FOR DATA COLLECTION.

1. Obtain background information on the units involved to follow the events of the action.
2. Obtain data from the National Records Center in Suitland, MD and manuscripts from the Center of Military History.
3. Continue research at the National Archives in Washington, D.C. to find information on the German units involved in the action.
4. Prepare bibliography of sources used in research effort.
5. Add data to filing system and database.
6. Analyze collected data and organize specific actions suitable for detailed description to include preparation of map-schematic.

f. PRELIMINARY BIBLIOGRAPHY.

PRIMARY SOURCES

"Combat Interviews," [Box 24017 File 209, Suitland, MD].

"News Items," [Box 5977 File 302-0.15, Suitland, MD].

"Regimental After Action Report," [Box 6070 File 302-INF(23)-0.3, Suitland, MD].

"Regimental Journal," [Box 6071 File 302-INF(23)-0.7, Suitland, MD].

"2d Infantry Division Journal," [Box 5989 File 302-3.2, Suitland, MD].

SECONDARY SOURCES

Cole, Hugh, M., The Ardennes: Battle of the Bulge, pg. 99-100.

4.6. ROCHERATH, BELGIUM

a. GENERAL DESCRIPTION OF ENGAGEMENT. This engagement took place on the 17th of December, 1944. The units involved were:

- o 1/9th Infantry, 2d Infantry Division (with Company K, 3/9th Infantry attached)
- o three guns from the 644th Tank Destroyer Battalion

Around 1930, three German tanks and perhaps a platoon of infantry passed through Company B before they were recognized as German. At approximately 2000, Company B engaged more of the same. Two tanks were disabled by mines, two others by bazookas. 15th Field Artillery Battalion provided support. An hour later, approximately five to six German tanks fired at the battalion for a half hour. A subsequent German infantry attack was cut down. A combined attack followed, which penetrated the battalion's position. One crippled tank was doused with gasoline and lit with thermite grenades. When the attack moved into the Company A sector, artillery "responded to the urgent call for help and within three minutes dropped in a concentration that stopped the assault."

References: CMH identified engagement; Cole, The Ardennes, 109-110.

b. SCHEDULE FOR DATA COLLECTION.

TABLE 4-5. MILESTONE SCHEDULE FOR DATA COLLECTION ON ROCHERATH, BELGIUM

TASKS	MONTHS						EFFORT	
	1ST	2ND	3RD	4TH	5TH	6TH	PEOPLE	HRS*
1. RESEARCH BACKGROUND INFORMATION TO UNDERSTAND EVENTS OF THE ACTION.	■						1	24
2. OBTAIN PERTINENT DATA FROM THE NATIONAL RECORDS CENTER IN SUITLAND, MD, AND THE CENTER OF MILITARY HISTORY (CMH)	■						2	120
3. CONTINUE RESEARCH AT THE NATIONAL ARCHIVES, WASHINGTON, D.C. TO FIND RECORDS ON THE GERMAN SIDE OF THE ACTION.		■					2	60
4. PREPARE BIBLIOGRAPHY OF SOURCES USED IN RESEARCH EFFORT.	■						1	80
5. ADD DATA TO FILING SYSTEM AND DATABASE.			■				1	80
6. ANALYZE COLLECTED DATA AND ORGANIZE SPECIFIC ACTIONS SUITABLE FOR DETAILED DESCRIPTION TO INCLUDE PREPARATION OF MAP-SCHEMATIC.			■				2	160
LEGEND: * TOTAL HOURS ■ DATA COLLECTION ■ DATA ORGANIZATION								

NOTE: Data for engagements 1, 4, and 5 will be collected simultaneously, therefore, the level of effort for data collection will not be as extensive.

c. REQUIRED PERSONNEL.

Senior Analyst	Direct data collection, primary writer
Junior Analyst (2)	Data collection, data base and file management
Military Historian	Assist in data collection, advisory capacity in description and analysis

d. TASK ASSIGNMENTS FOR DATA COLLECTION.

1. Obtain background information on the units involved to follow the events of the action.
2. Obtain data from the National Records Center in Suitland, MD and manuscripts from the Center of Military History.
3. Continue research at the National Archives in Washington, D.C. to find information on the German units involved in the action.
4. Prepare bibliography of sources used in research effort.
5. Add data to filing system and database.
6. Analyze collected data and organize specific actions suitable for detailed description to include preparation of map-schematic.

e. PRELIMINARY BIBLIOGRAPHY.

PRIMARY SOURCES

"Combat Interviews," [Box 24017 File 209, Suitland, MD].

"News Items," [Box 5977 File 302-0.15, Suitland, MD].

"Regimental After Action Report," [Box 6064 File 302-INF(9)-0.3, Suitland, MD].

"Regimental Journal," [Box 6067 File 302-INF(9)-0.7, Suitland, MD].

"2d Infantry Division Journal," [Box 5989 File 302-3.2, Suitland, MD].

"644th Tank Destroyer Battalion After Action Report," [Box 23636 File TDBN-644-0.3, Suitland, MD].

SECONDARY SOURCES

Cole, Hugh, M., The Ardennes: Battle of the Bulge, pg. 99-100.

4.7. LA MAISON ROUGE, FRANCE

a. **GENERAL DESCRIPTION OF ENGAGEMENT.** This engagement took place on the 24th of January, 1945, at the Ill River, near the SE corner of the Colmar forest in France. The units involved were:

- o Company I, 3/15th Infantry, 3rd Infantry Division

Company I, 3/15th Infantry, 3rd Infantry Division, occupied a crossroad on the unoccupied side of the Ill river, beyond the bridgehead (where Company K was deployed). At 0800, the Germans attacked Company I with 13 assault guns, approximately 1 company of infantry, and a few tanks and other vehicles. The Germans overran Company I, its 3rd platoon mostly captured, and it retreated to Company K's position. The bridge had broken the previous day, thereby denying American armor support, except fire by tanks and TDs from across the river. The battle continued until mid-afternoon, when 1/15th Infantry counterattacked with armor and drove off the Germans.

References: CMH identified engagement; Clarke draft manuscript, "Riviera to the Rhine", chapter 29.

b. **COMMENTS TO RESEARCHERS.** In order to fully capture this engagement, records should be examined from the 22th of January to the 25th of January for all units that were involved. There appears to be potential for developing actions from other companies rather than I.

- c. **SCHEDULE FOR DATA COLLECTION.**

TABLE 4-6. MILESTONE SCHEDULE FOR DATA COLLECTION ON LA MAISON ROUGE, FRANCE

TASKS	MONTHS						EFFORT	
	1ST	2ND	3RD	4TH	5TH	6TH	PEOPLE	HRS*
1. RESEARCH BACKGROUND INFORMATION TO UNDERSTAND EVENTS OF THE ACTION	■						1	32
2. OBTAIN PERTINENT DATA FROM THE NATIONAL RECORDS CENTER IN SUITLAND, MD, AND THE CENTER OF MILITARY HISTORY (CMH)	■						2	200
3. CONTINUE RESEARCH AT THE NATIONAL ARCHIVES, WASHINGTON, D.C. TO FIND RECORDS ON THE GERMAN SIDE OF THE ACTION.		■					2	80
4. PREPARE BIBLIOGRAPHY OF SOURCES USED IN RESEARCH EFFORT.	■	■	■	■	■	■	1	80
5. ADD DATA TO FILING SYSTEM AND DATABASE.			■				1	80

continued on next page...

TASKS	MONTHS						EFFORT	
	1ST	2ND	3RD	4TH	5TH	6TH	PEOPLE	HRS*
continued								
6. ANALYZE COLLECTED DATA AND ORGANIZE SPECIFIC ACTIONS SUITABLE FOR DETAILED DESCRIPTION TO INCLUDE PREPARATION OF MAP-SCHEMATIC.							2	200
LEGEND: * TOTAL HOURS DATA COLLECTION DATA ORGANIZATION								

d. REQUIRED PERSONNEL.

Senior Analyst	Direct data collection, primary writer
Junior Analyst (2)	Data collection, data base and file management
Military Historian	Assist in data collection, advisory capacity in description and analysis

e. TASK ASSIGNMENTS FOR DATA COLLECTION.

1. Obtain background information on the units involved to follow the events of the action.
2. Obtain data from the National Records Center in Suitland, MD and manuscripts from the Center of Military History.
3. Continue research at the National Archives in Washington, D.C. to find information on the German units involved in the action.
4. Prepare bibliography of sources used in research effort.
5. Add data to filing system and database.
6. Analyze collected data and organize specific actions suitable for detailed description to include preparation of map-schematic.

f. PRELIMINARY BIBLIOGRAPHY.

PRIMARY SOURCES

"Report of Operations," [Box 6111 File 303-0.3, Suitland, MD].

"Operation Report HQ 3d ID," [Box 6111 File 303-0.3, Suitland, MD].

"G-3 Report," [Box 6111 File 303-0.3, Suitland, MD].

"Combat Interviews," [Box 24020 File 27, Suitland, MD].

"La Maison Rouge: The Story of an Engagement 23-24 January 1945," [Box 24020, Suitland, MD].

Sutton, William, Lt., "30th Infantry in Operation GRANDSLAM," [Box 24020, Suitland, MD].

HQ 15th Infantry Regiment, "Report of Operations," Sections I, II, III, and G-3 Report, [Box 6111 File 303-0.3, Suitland, MD].

SECONDARY SOURCES

Clarke Draft Manuscript, "Riviera to the Rhine," Chapter 29.

4.8. HILL 314, MORTAIN, FRANCE

a. GENERAL DESCRIPTION OF ENGAGEMENT. This engagement took place from the 7th through the 12th of August, 1944. The units involved were:

- o 2/120th Infantry, 30th Division
- o Company K from 3/120th Infantry

During the course of the German attack on 7 August 1944, the 2/120th, a rifle company from 3/120th Infantry, a heavy weapons company, and some anti-tank pieces were surrounded on Hill 314, where they withstood attacks from 17th SS Panzer Grenadier Division (regiment-sized) until they were relieved on 12 August 1944. The hill suffered approximately 300 casualties and received massive artillery support throughout.

b. SCHEDULE FOR DATA COLLECTION.

TABLE 4-7. MILESTONE SCHEDULE FOR DATA COLLECTION ON HILL 314, MORTAIN, FRANCE

TASKS	MONTHS						EFFORT	
	1ST	2ND	3RD	4TH	5TH	6TH	PEOPLE	HRS*
1. RESEARCH BACKGROUND INFORMATION TO UNDERSTAND EVENTS OF THE ACTION.	■						1	24
2. OBTAIN PERTINENT DATA FROM THE NATIONAL RECORDS CENTER IN SUITLAND, MD, USMHI IN CARLISLE, PA, AND THE INFANTRY SCHOOL LIBRARY IN FT. BENNING, GA.	■						2	120
3. CONTINUE RESEARCH AT THE NATIONAL ARCHIVES, WASHINGTON, D.C. TO FIND RECORDS ON THE GERMAN SIDE OF THE ACTION.		■					2	60
4. PREPARE BIBLIOGRAPHY OF SOURCES USED IN RESEARCH EFFORT.	■						1	80
5. ADD DATA TO FILING SYSTEM AND DATABASE.			■				1	80
6. CONDUCT ORAL INTERVIEWS WITH WWII VETERANS TO FILL HOLES IN DATA.				■			1	24
7. ANALYZE COLLECTED DATA AND ORGANIZE SPECIFIC ACTIONS SUITABLE FOR DETAILED DESCRIPTION TO INCLUDE PREPARATION OF MAP-SCHEMATIC.			■				2	160
LEGEND: * TOTAL HOURS ■ DATA COLLECTION ■ DATA ORGANIZATION								

NOTE: Data for engagements 2, 3, and 7 will be collected simultaneously, therefore, the level of effort for data collection will not be as extensive.

c. REQUIRED PERSONNEL.

Senior Analyst	Direct data collection, primary writer
Junior Analyst (2)	Data collection, data base and file management
Military Historian	Assist in data collection, advisory capacity in description and analysis

d. TASK ASSIGNMENTS FOR DATA COLLECTION.

1. Obtain background information on the units involved to follow the events of the action.
2. Obtain data from the National Records Center in Suitland, MD, the US Military History Institute in Carlisle, PA, and the Infantry School Library in Ft. Benning, GA.
3. Continue research at the National Archives in Washington, D.C. to find information on the German units involved in the action.
4. Prepare bibliography of sources used in research.
5. Add data to filing system and database.
6. Conduct oral interviews with World War II veterans to fill holes in data.
7. Analyze collected data and organize specific actions suitable for detailed description to include preparation of map-schematic.

e. PRELIMINARY BIBLIOGRAPHY.

PRIMARY SOURCES

- "Combat Interviews, 30th Infantry Division, Mortain," [RG 407, National Archives, Suitland, MD].
- "G-2 and G-3 Journal and Files, 30th Infantry Division, 6-10 August 1944," [RG 407, National Archives, Suitland, MD].
- "G-2 and G-3 After Action Report, 30th Infantry Division, 6-10 August 1944," [RG 407, National Archives, Suitland, MD].
- "S-2 and S-3 Journal and Files, 120th Infantry Regiment, 6-10 August 1944," [RG 407, National Archives, Suitland, MD].
- "S-2 and S-3 After Action Report, 120th Infantry Regiment, 6-10 August 1944," [RG 407, National Archives, Suitland, MD].

- "S-2 and S-3 Journal and Files, 118th Field Artillery Battalion, 6-10 August 1944," [RG 407, National Archives, Suitland, MD].
- "S-2 and S-3 After Action Report, 118th Field Artillery Battalion, 6-10 August 1944," [RG 407, National Archives, Suitland, MD].
- "S-2 and S-3 Journal and Files, 113th Field Artillery Battalion, 6-10 August 1944," [RG 407, National Archives, Suitland, MD].
- "S-2 and S-3 After Action Report, 113th Field Artillery Battalion, 6-10 August 1944," [RG 407, National Archives, Suitland, MD].
- "S-2 and S-3 Journal and Files, 197th Field Artillery Battalion, 6-10 August 1944," [RG 407, National Archives, Suitland, MD].
- "S-2 and S-3 After Action Report, 197th Field Artillery Battalion, 6-10 August 1944," [RG 407, National Archives, Suitland, MD].
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- "S-2 and S-3 After Action Report, 230th Field Artillery Battalion, 6-10 August 1944," [RG 407, National Archives, Suitland, MD. Map, Mortain sheet No. 34/10 N.E. 1:25,000].
- "S-2 and S-3 Journal and Files, 823d Tank Destroyer Battalion, August 1944," [RG 407, National Archives, Suitland, MD].
- "S-2 and S-3 After Action Report, 838th Tank Destroyer Battalion, August 1944," [RG 407, National Archives, Suitland, MD].
- Kerley, Ralph, A., MAJ, "Operations of 2d Battalion, 120th Infantry Regiment at Mortain, 6-12 August 1944," [Monograph, Infantry Center Library, Ft. Benning, GA].

SECONDARY SOURCES

- Blumenson, Martin, Breakout and Pursuit (Washington, DC: OCMH, 1961).
- Committee 24, Employment of Four Tank Destroyer Battalions in the ETO. (Fort Knox, May 1950).
- Hewitt, Robert L., Workhorse of the Western Front: The Story of the 30th Infantry Division (Washington: The Infantry Journal Press, 1946).
- 823d Tank Destroyer Battalion, A History of the 823d Tank Destroyer Battalion (1951).

4.9 STOUMONT, BELGIUM

a. GENERAL DESCRIPTION OF ENGAGEMENT. This engagement took place on the 20th of December, 1944. The units involved were:

- o 1/119th Infantry, 30th Infantry Division
- o one tank company from 740th Tank Destroyer Battalion

In the early evening the Americans captured a sanatorium in the town. The Germans counterattacked just before midnight with armor and infantry, and recaptured the sanatorium, but were unable to break through due to "accurate and incessant shellfire." The Germans tried again at 210530 December but were turned back by artillery fire and tank reinforcements.

References: CMH identified engagement; Cole, The Ardennes, 349-351.

b. SCHEDULE FOR DATA COLLECTION.

TABLE 4-8. MILESTONE SCHEDULE FOR DATA COLLECTION ON STOUMONT, BELGIUM

TASKS	MONTHS						EFFORT	
	1ST	2ND	3RD	4TH	5TH	6TH	PEOPLE	HRS*
1. RESEARCH BACKGROUND INFORMATION TO UNDERSTAND EVENTS OF THE ACTION.	■						1	32
2. OBTAIN PERTINENT DATA FROM THE NATIONAL RECORDS CENTER IN SUITLAND, MD, AND THE CENTER OF MILITARY HISTORY (CMH)	■						2	180
3. CONTINUE RESEARCH AT THE NATIONAL ARCHIVES, WASHINGTON, D.C. TO FIND RECORDS ON THE GERMAN SIDE OF THE ACTION.		■					2	80
4. PREPARE BIBLIOGRAPHY OF SOURCES USED IN RESEARCH EFFORT.	■						1	80
5. ADD DATA TO FILING SYSTEM AND DATABASE.			■				1	80
6. ANALYZE COLLECTED DATA AND ORGANIZE SPECIFIC ACTIONS SUITABLE FOR DETAILED DESCRIPTION TO INCLUDE PREPARATION OF MAP-SCHEMATIC.			■				2	200
LEGEND: <div style="display: flex; align-items: center; margin-top: 5px;"> <div style="width: 15px; height: 15px; border: 1px solid black; margin-right: 5px;"></div> <div> * TOTAL HOURS ■ DATA COLLECTION ■ DATA ORGANIZATION </div> </div>								

c. REQUIRED PERSONNEL.

Senior Analyst	Direct data collection, primary writer
Junior Analyst (2)	Data collection, data base and file management
Military Historian	Assist in data collection, advisory capacity in description and analysis

d. TASK ASSIGNMENTS FOR DATA COLLECTION.

1. Obtain background information on the units involved to follow the events of the action.
2. Obtain data from the National Records Center in Suitland, MD and manuscripts from the Center of Military History.
3. Continue research at the National Archives in Washington, D.C. to find information on the German units involved in the action.
4. Prepare bibliography of sources used in research effort.
5. Add data to filing system and database.
6. Analyze collected data and organize specific actions suitable for detailed description to include preparation of map-schematic.

e. PRELIMINARY BIBLIOGRAPHY.

PRIMARY SOURCES

"117th Infantry Regiment History 1944-45," [Box 8894 File 330-INF(117)-0, Suitland, MD].

"117th Infantry Regiment Unit Journal," [Box 8897 File 330-INF(117)-0.7, Suitland, MD].

"119th Infantry Regiment History 1944-45," [Box 8908 File 330-INF(119)-0, Suitland, MD].

"119th Infantry Regiment Unit Journal," [Box 8909 File 330-INF(119)-0.7, Suitland, MD].

"120th Infantry Regiment History," [Box 8917 File 330-INF(120)-0, Suitland, MD].

"120th Infantry Regiment After Action Report," [Box 8917 File 330-INF(120)-0.3, Suitland, MD].

"120th Infantry Regiment Unit Journal," [Box 8923 File 330-INF(120)-0.7, Suitland, MD].

"30th Infantry Division Combat Interviews," [Box 24039 File 100, Suitland, MD].

SECONDARY SOURCES

Cole, Hugh M., The Ardennes: Battle of the Bulge, pg. 349-351.

4.10 KOMMERSCHIEDT, GERMANY

a. GENERAL DESCRIPTION OF ENGAGEMENT. This engagement took place on the 4th of November, 1944. The units involved were:

- o 3/110th Infantry, 28th Infantry Division
- o other assorted elements

The US 28th Infantry Division, part of the effort by V and VII Corps to secure the Hürtgen Forest and press on towards Düren and the Rhine, was driving southeast from the towns of Vossenack and Germeter in order to gain a foothold across the Kall River. The immediate objectives were the villages of Schmidt and Kommerscheidt. These villages were seized on 3 November 1944 by the 112th Infantry Regiment. Meanwhile, the commanders of the German Army Group B, Fifth Panzer Army, and Seventh Army were meeting near Cologne to plan a counterattack in case of just such an American thrust. As a result, the Germans were swift to commit a kampfgruppe of the veteran 116th Panzer Division to aid the 89th Infantry Division in repulsing the Americans.

The 1055th Regiment of the 89th Infantry Division was recalled to the Schmidt-Kommerscheidt area to lend its strength. At dawn (about 0730) on 4 November 1944, the 1055th Regiment and the 16th Panzer Regiment, with at least 10 tanks and assault guns, began an artillery barrage on US positions in Schmidt. This was followed by a German assault 30 minutes later. The German tanks were impervious to the American bazookas fired at them. The US outposts around Schmidt fled in disarray towards Kommerscheidt and back across the Kall River. The Americans at Kommerscheidt steeled themselves for the onslaught, knowing that their tanks and heavy weapons were still on the far side of the Kall awaiting the construction of suitable bridges.

The Germans attacked in early afternoon with at least five Mark IV and Mark V tanks and 150 infantry. The tanks shelled the US positions from outside bazooka range. The defenders held and eventually knocked out one of the Panzers with bazooka fire, while a bomb from a P-47 disabled another. Three M4 Sherman tanks from the 707th Tank Battalion accounted for the other three German tanks. Deprived of armor support, the German infantry withdrew at about 1600 hours.

b. SCHEDULE FOR DATA COLLECTION.

TABLE 4-9. MILESTONE SCHEDULE FOR DATA COLLECTION ON KOMMERSCHIEDT, GERMANY

TASKS	MONTHS						EFFORT	
	1ST	2ND	3RD	4TH	5TH	6TH	PEOPLE	HRS*
1. RESEARCH BACKGROUND INFORMATION TO UNDERSTAND EVENTS OF THE ACTION.	■						1	40
2. OBTAIN PERTINENT DATA FROM THE NATIONAL RECORDS CENTER IN SUITLAND, MD, AND THE CENTER OF MILITARY HISTORY (CMH)	■						2	200
3. CONTINUE RESEARCH AT THE NATIONAL ARCHIVES, WASHINGTON, D.C. TO FIND RECORDS ON THE GERMAN SIDE OF THE ACTION.		■					2	80
4. PREPARE BIBLIOGRAPHY OF SOURCES USED IN RESEARCH EFFORT.	■						1	80
5. ADD DATA TO FILING SYSTEM AND DATABASE.			■				1	80
6. ANALYZE COLLECTED DATA AND ORGANIZE SPECIFIC ACTIONS SUITABLE FOR DETAILED DESCRIPTION TO INCLUDE PREPARATION OF MAP-SCHEMATIC.			■				2	160
LEGEND: * TOTAL HOURS ■ DATA COLLECTION ■ DATA ORGANIZATION								

c. REQUIRED PERSONNEL.

Senior Analyst	Direct data collection, primary writer
Junior Analyst (2)	Data collection, data base and file management
Military Historian	Assist in data collection, advisory capacity in description and analysis

d. TASK ASSIGNMENTS FOR DATA COLLECTION.

1. Obtain background information on the units involved to follow the events of the action.
2. Obtain data from the National Records Center in Suitland, MD and manuscripts from the Center of Military History.
3. Continue research at the National Archives in Washington, D.C. to find information on the German units involved in the action.

4. Prepare bibliography of sources used in research effort.
5. Add data to filing system and database.
6. Analyze collected data and organize specific actions suitable for detailed description to include preparation of map-schematic.

e. PRELIMINARY BIBLIOGRAPHY.

PRIMARY SOURCES

- "28th Infantry Division, G-2 Periodic Report, 3-5 November 1944," [RG 328, Box 8483, Suitland, MD].
- "28th Infantry Division, G-2 Journal, 4-7 November 1944," pp. 4-7, [RG 328, Box 8487, Suitland, MD].
- "28th Infantry Division, G-2 Journal, November 1944," pp. 3-7, [RG 328, Box 8495, Suitland, MD].
- "28th Infantry Division, 112th Infantry Regiment S-2 Journals, November 1944," pp. 4-7, [RG 328, Box 8608, Suitland, MD].
- "28th Infantry Division, 112th Infantry Regiment S-2 and S-3 Journals, November 1944," pp. 4-7, [RG 328, Box 8611, Suitland, MD].
- "28th Infantry Division, 112th Infantry Regiment, Company "K" Monthly Historical Reports, November 1944," [RG 328, Box 8607, Suitland, MD].
- "28th Infantry Division, History -- 1st & 2d Battalions, 112th Infantry Regiment," [RG 328, Box 8607, Suitland, MD].
- "28th Infantry Division, Monthly & Daily Summaries -- 112 Infantry Regiment," [RG 328, Box 8607, Suitland, MD].
- "28th Infantry Division, 112th Infantry Regiment, Company "K" Diary, November 1944," pp. 27-28, [RG 328, Box 8619, Suitland, MD].

SECONDARY SOURCES

- MacDonald, Charles B., and Sidney T. Matthews, Three Battles: Arnaville, Altuzzo, and Schmidt (1952).
- MacDonald, Charles B., The Seigfried Line (1963).

4.11 HOSINGEN, GERMANY

a. **GENERAL DESCRIPTION.** Company "K", 110th Infantry Regiment, 28th Infantry Division, reinforced by Company "B", 103d Engineer Combat Battalion, garrisoned the village of Hosingen. The village was on a ridge overlooking the Our River, which was crossed by the German 26th Volksgrenadier Division (VGD) in the opening hours of the Ardennes offensive. The leading units of the German 77th Grenadier Regiment bypassed the town to the north, cutting the westward escape of Company "K". The 2d Battalion, 77th Grenadier Regiment, advanced to the southern edge of Hosingen under cover of artillery fire and began house-to-house fighting which lasted all day. As their ammunition ran low, the US defenders called for reinforcement and resupply. At 2200 hours, four M4 Shermans arrived, but they brought no rifle ammunition. Meanwhile, at dusk, the commander of the 26th VGD committed the 78th Grenadier Regiment's replacement training battalion into the Hosingen attack. Despite heavy casualties, the 78th replacement battalion forced its way into the northern part of the village. There, it was left to carry on the fight as the 77th Regiment disengaged and moved on west towards Bastogne. The German replacement battalion hammered away at Hosingen, putting the town in flames. Still the German battalion dared not approach close due to the US Sherman tanks inside the village. Early on the 18th, with their ammunition exhausted, "K" Company radioed that it was surrendering. Its stand had held up the advance of the 26th VGD for 48 hours.

b. SCHEDULE FOR DATA COLLECTION.

TABLE 4-10. MILESTONE SCHEDULE FOR DATA COLLECTION ON HOSINGEN, GERMANY

TASKS	MONTHS						EFFORT	
	1ST	2ND	3RD	4TH	5TH	6TH	PEOPLE	HRS*
1. RESEARCH BACKGROUND INFORMATION TO UNDERSTAND EVENTS OF THE ACTION	■						1	32
2. OBTAIN PERTINENT DATA FROM THE NATIONAL RECORDS CENTER IN SUITLAND, MD, AND THE CENTER OF MILITARY HISTORY (CMH)	■						2	160
3. CONTINUE RESEARCH AT THE NATIONAL ARCHIVES, WASHINGTON, D.C. TO FIND RECORDS ON THE GERMAN SIDE OF THE ACTION.		■					2	80
4. PREPARE BIBLIOGRAPHY OF SOURCES USED IN RESEARCH EFFORT.	■	■					1	80
5. ADD DATA TO FILING SYSTEM AND DATABASE.			■				1	80
6. ANALYZE COLLECTED DATA AND ORGANIZE SPECIFIC ACTIONS SUITABLE FOR DETAILED DESCRIPTION TO INCLUDE PREPARATION OF MAP-SCHEMATIC.			■				2	160
LEGEND: * TOTAL HOURS ■ DATA COLLECTION ■ DATA ORGANIZATION								

c. REQUIRED PERSONNEL.

Senior Analyst	Direct data collection, primary writer
Junior Analyst (2)	Data collection, data base and file management
Military Historian	Assist in data collection, advisory capacity in description and analysis

d. TASK ASSIGNMENTS FOR DATA COLLECTION.

1. Obtain background information on the units involved to follow the events of the action.
2. Obtain data from the National Records Center in Suitland, MD and manuscripts from the Center of Military History.
3. Continue research at the National Archives in Washington, D.C. to find information on the German units involved in the action.
4. Prepare bibliography of sources used in research effort.
5. Add data to filing system and database.
6. Analyze collected data and organize specific actions suitable for detailed description to include preparation of map-schematic.

e. PRELIMINARY BIBLIOGRAPHY.

PRIMARY SOURCES

"28th Infantry Division, Combat Interviews, German Winter Offensive, 14-16 December 1944," [Box 24233, Folder 78, Suitland, MD].

SECONDARY SOURCES

Cole, Hugh, The Ardennes Offensive, OCMH, Washington, D.C., 1965.

MacDonald, Charles B., Time for Trumpets, William Morrow & Company, Inc., New York, 1985.

MacDonald, Charles B., The Siegfried Line Campaign, OCMH, Washington, D.C., 1963.

Pallud, Jean Paul, The Battle of the Bulge: Then and Now, Battle of Britain Prints International Limited, London, 1984.

Phillips, Robert, To Save Bastogne.

Data collection plans for St. Barthelmy, Abbaye Blanche and Hill 314 were utilized for detailed data collection in this effort. The following section and Volume II of this report provide the results of the detailed data collection described in these plans.

SECTION 5

DETAILED DATA COLLECTION AND SUMMARIZATION OF MORTAIN

5.1 GENERAL

The results of the detailed data collection on Mortain can be found in Volume II of this report. This section provides an overview of the data collection tasks. Tasks 3, 4, 5 and 6 were performed repetitively for all the combat actions described in this report. These tasks were to collect, compile, organize and appraise the data for each action; identify the forces engaged in the action; summarize the data; and provide a narrative account of the action.

The engagement at St. Barthelmy, France, was selected as the engagement to pursue for assessing the feasibility developing combat actions in Phase I. As the data collection progressed, it became evident that for the same resources, data on all the engagements at Mortain could be collected at the same time. This was due primarily to the fact that the same US Army and German divisions were involved in all the engagements. Since we were already delving into those records for the August timeframe for the St. Barthelmy engagement, it was a simple job to collect everything at once which covered all the engagements at Mortain. In addition, other references identified were generally directed at the Mortain battle and encompassed all the engagements rather than looking a single one. This was an important finding because it directs grouping of other engagements for data collection to take advantage of the same circumstances.

With the resources available, SAIC was able to identify and describe 14 combat actions from the St. Barthelmy and Abbaye Blanche engagements. Hill 314 (also identified as 317 in some records) did not have any anti-tank action that could be identified from the records.

5.2

RESEARCHING THE DATA

SAIC used a combination team of senior analysts, a military historian and junior analysts to research, collect and prepare the data. Primary sources were the 30th Infantry Division records, the 823rd Tank Destroyer Battalion records and oral interviews with veterans of the 823rd Tank Destroyer Battalion. The bibliography in Appendix B and the index in Appendix C to this Volume list the sources that were examined.

Any data pertaining to Mortain was extracted and entered into a database created for this project. The database contains fields for:

- | | | | |
|---|--------------------|---|--------------|
| • | UNIT | • | DATE |
| • | TIME | • | NATIONALITY |
| • | X COORDINATE | • | Y COORDINATE |
| • | ACTION DESCRIPTION | • | SOURCE |

The database was then sorted chronologically (down to minutes, when available). This allowed for cross checking of data from different sources to determine discrepancies and to identify places where data was lacking. It also provided a relatively easy method for writing the narrative of events and tracing the action on maps.

Tables were created in order to collect the primary data objectives. Table 5-1 is an example of one such table with data that was found from the written records. As combat actions were identified, a table was created and the data filled in. The source of the data was also noted in the table. Each combat action has an associated data table.

5.3

ORAL INTERVIEWS

SAIC was able to make contact with several veterans of the 823rd Tank Destroyer Battalion through the Tank Destroyer Association. Several of them were mentioned in the After Action Reports that had been researched in the Archives. These veterans agreed to recount their experience and memories of the actions at Mortain. Transcripts of these interviews are found in Appendix B to Volume

TABLE 5-1. Example of Combat Action Data Table
ACTION 1: THE ROADBLOCK AT LE FANTAY, 7 AUGUST 1944

DATA OBJECTIVES	ATTACKER	DEFENDER	REMARKS
1. Disposition of Defense Weapons and Location Relative to Attack	---	Weapons were pointed northeast covering anticipated avenue of German approach	Folder #81
2. Strength of Defending Infantry	---	1/2 platoon (approx 35 men) of 3d Plt, B Co, 117 Inf Regt	Folder #81
3. Size and Activity of Infantry Accompanying Attack	1 company from 2. PzGren Regt, 2. PzD	---	Folder #102
4. No. and Type of Anti-tank Weapons in Visual Contact with Enemy a. 3" TD Guns (towed) b. 3" TD Guns (SP) c. 57mm AT Guns d. Bazookas	---	a. None b. None c. Two c. Two	Folder #81
5. No. of Enemy Tanks and SP Guns (including those in fire support)	2 to 4 Mk V Panther tanks	---	Folder #81
6. US Tanks Present	---	None	Folder #81
7. Infantry Casualties	?	2 KIA, 2 WIA	File 81
8. Number and Type of Vehicle Casualties and/or hits (enemy)	Unknown number of hits; no vehicle casualties reported	---	Folder #81
9. Artillery	German mortar fore accompanied tank/infantry attack	Requested fire at 2215 hours; US arty on target at 0015 hrs (after battle)	Folder #81

II of this report. The information from these interviews primarily account for the number of combat actions that we were able to identify for the Mortain battle.

In order to conduct an oral interview, our team first completed the research and data collection from all written records that could be found. The database was established and the narrative and data tables prepared from the written records. Part of this process was the establishment of maps that pinpointed the locations of troops and guns. The team used both copies of original WWII maps and our own computer generated maps that zoomed in on areas of interest. At the end of this process, not only could gaps in the data be identified but the team was well versed on the course of the engagement.

At this point, the team was prepared to interview the veteran by walking through the action and asking questions and prompting for information as needed. The information gathered from the interviews was compared with the original written records and with the data from the combat interviews conducted immediately after the engagement during WWII. In addition, verification of the data by other methods was done if possible. For example, the Naval Observatory has meteorological data on the sunrise and sunset for August 1944. These were checked to see if the recollections of times seemed accurate. If there were major discrepancies then the oral history data was not used. SAIC found, however, that there were very few discrepancies and the oral histories served to enhance and better explain the written data that had been uncovered. The oral histories conducted proved very successful on four occasions and provided a great deal of data not otherwise available.

5.4 SUMMARY OF DATA COLLECTION

The grouping of engagements by battle and common units provides an extremely efficient method of collecting data. Since records are generally kept by month for a given unit, all the data that are available can be examined and collected at once. The requesting and waiting for records is quite time consuming. For example, with Mortain, all the action occurred in August, 1944

with the same US units. Since August records were already pulled for the St. Barthelmy engagement, it was no additional effort to collect everything in August, therefore covering both the Hill 314 engagement and Abbaye Blanche engagements. Additional effort would come in sorting through the data; however, this could be delayed until later, but the data would already be available.

SAIC tried both personal interviews and telephone interviews as a test case for collecting data in Phase I as part of the feasibility study. Both were extremely successful and are highly recommended as potential sources of data for future effort. These data will most likely be unavailable in the near future and capturing it now will greatly enhance the database. We found it could be done in a cost effective manner with some preplanning.

SECTION 6 SUMMARY OF FINDINGS AND RECOMMENDATIONS

FINDINGS

- 34 engagements have been identified that have good potential for developing anti-tank combat actions.
- Engagements in North Africa have very little detailed data relevant to this project surviving. Some potential exists in the Italian campaigns. The best engagements for this project are those in Northern Europe in the last two years of the war.
- At least one combat action per engagement can be found. It is more likely that multiple combat actions per engagements can be identified.
- The US Army Infantry and Armor Division records provide much of the secondary and tertiary data required, but not as much of the primary data.
- The Tank Destroyer Battalion records are better sources of primary data.
- The Combat Interviews found in the Archives are the best source of primary recorded data.
- Oral histories proved to be extremely useful and effective and can be done in a cost effective manner.
- Careful grouping of the engagements for detailed data collection can provide efficiency in time and resources.

RECOMMENDATIONS

- Research can be continued on additional engagements (at least the top 17 identified) to collect a substantial number of combat actions to provide a significant sample.
- Oral histories greatly strengthen the data collection effort and should be pursued whenever individuals can be identified.
- In additional efforts, selectively group engagements together to increase efficiency of data collection.
- Initial efforts should concentrate on those engagements which have combat interviews present in the Archives.

- The next engagements to pursue should include:

Dom Butgenbach, Belgium
Krinkelter Wald, Belgium
Rocherath, Belgium
Maison Rouge, France
Stoumont, Belgium
Kommerscheidt, Germany
Hosingen, Germany
Bastogne
Heinerscheid, Luxembourg
Baraque de Fraiture
Stavelot
Manhay Crossroads
Schmidt, France
Battle of Five Points, France

APPENDIX A

LIST OF CONTRIBUTORS

and

STATEMENT OF CONTRACTOR'S QUALITY REVIEW BOARD

LIST OF CONTRIBUTORS

NAME	TITLE	ROLE
Victoria Young	Principal Investigator	Project Leader
Charles M. Baily	Senior Analyst/Historian	Senior Researcher and Advisor
Joyce B. Boykin	Junior Analyst	Junior Researcher and File Manager
Lloyd J. Karamales	Junior Analyst	Lead Researcher and Data Base Manager
Albert D. McJoynt	Military Historian (Consultant)	Historian Researcher and Advisor
James A. Wojcik	Senior Analyst	Senior Researcher and Military Advisor

STATEMENT OF CONTRACTOR'S QUALITY REVIEW BOARD

The following individuals formed the technical quality review board responsible for the technical quality of the final report prepared under this contract. They each personally vouch for the accuracy, completeness, objectivity, and technical acceptability of all data, methods and techniques, findings, interpretations, and conclusions presented in this final report.

Brian R. McEnany
Division Manager
Military Operations Analysis Division
Science Applications International Corporation

Bruce B. Halstead
Senior Analyst/Principal Investigator
Military Acquisitions Support Division
Science Applications International Corporation

Charles M. Baily
Senior Analyst/Military Historian
Arms Control Policy Division
Science Applications International Corporation

(Although part of the project team, Mr. Baily was purposely not a writer so that he could serve as a quality control reviewer)

APPENDIX B
GOVERNMENT STATEMENT OF WORK

**STATEMENT OF WORK FOR
ANTI-ARMOR DEFENSE DATA (A2D2) STUDY**

1. **TITLE.** Anti-Armor Defense Data (A2D2).
2. **BACKGROUND.**

a. It is widely recognized that weapon performance in combat is much lower than anticipated from firing range or field experimentation results. Over the last several years, researchers at the United Kingdom's Defence Operational Analysis Establishment (DOAE) have quantitatively compared small arms performance in actual combat with their performance in instrumented field trials. Unclassified versions of this work have appeared in Journal of the Royal United Services Institute for Defence Studies (RUSI), June 1986, pp. 33-43, and in Journal of the Operational Research Society (UK), Vol 38 (1987), No. 2, pp. 149-162. These results confirmed and extended earlier work (e.g., S.L.A. Marshall's work during WWII and Korea) that reported large differences between weapon performance in combat and estimates based on either firing range or field trial results. This is a matter of considerable interest, because the latter generally form the basis for inputs to US Army wargames and simulations. Because of the promise of DOAE's approach, an informal agreement was reached between the US Deputy Under Secretary of the Army (Operations Research) and DOAE to pursue a collaborative study to extend this analysis to anti-tank weapons. In particular, it was envisioned that a US contractor would be employed to collect data on several actions in which US forces were defending against enemy armor attacks.

b. However, it was considered necessary to make a preliminary evaluation of the feasibility and desired scope of any such contract effort. Accordingly, Director, US Army Concepts Analysis Agency (CAA) requested the US Army's Chief of Military History (CMH) to conduct a preliminary feasibility study. This feasibility study was aimed at verifying the availability of records likely to contain useful data on the performance of US anti-tank weapons, and at obtaining accurate specific information on which to base subsequent contract negotiations. It covered such points as the following:

- (1) Are US data sources on anti-tank weapons operating on the defense in past engagements adequate to support a DOAE-type analysis of combat degradation effects?
- (2) Should a contract be let to collect and document such data?
- (3) What Statement of Work (SOW) or Request for Proposals (RFP) package would be satisfactory for it?

Significant results of this feasibility study are now available, and have been used in formulating this (SOW). In particular, it develops that the most satisfactory approach would be to gather the data in four increments of approximately ten combat actions each. One of the reasons for this is that it affords periodic reassessments of the accomplishments to date before proceeding with the next increment. Such an incremental approach is particularly appropriate because it is uncertain that sufficient valid data can be found to support the envisioned analysis, since the historical record is often incomplete (especially for Platoon- and Company-level operations). The chief problem is finding actions for which there is a fairly complete record.

3. **OBJECTIVE.** The objective of this contract effort is to collect detailed historical data on at least ten combat actions in which US forces were defending against enemy armor attacks. This is perceived as the initial increment of a larger effort. We foresee the need for conducting additional studies until ultimately we have accumulated data on about one hundred such actions. These data will be combined with comparable data assembled by the UK. The total data set will then be used in a joint US/UK analysis of the degradation in anti-armor defense

effectiveness under combat conditions. The joint analysis will attempt to extend the approach developed by DOAE for small arm and machine gun degradation to the case of anti-armor weapons. Instrumented test results will also be used in this joint analysis. The resulting degradation factors will allow projections of the combat performance of future antiarmor defenses to be based upon a balanced combination of historical and instrumented field test data.

4. **SCOPE.** The contractor shall furnish the necessary personnel, materials, facilities, and other services as may be required to perform the work set forth in this SOW. The contractor shall collect, organize into systematized data files, and document detailed historical data on at least ten actions in which US forces were defending against enemy armor attack. The combat actions on which such data shall be collected shall be a subset selected from the thirty candidate actions listed at Attachment 1 to this SOW. For this purpose, the contractor shall consult at least the sources of information listed in Attachment 2 to this SOW. Probably additional sources will have to be consulted to complete the tasks called for in this SOW. The contractor shall collect all of the information available from these sources on at least the types of data listed in Attachment 3 to this SOW. Specific contributing task areas are:

- a. Data Collection Plan
- b. Data Compilation and Organization
- c. Identify Forces Involved in the Action
- d. Data Summarization
- e. Narrative Account of the Action
- f. Technical Reports

5. **TASK REQUIREMENTS.**

a. **Task Area 1 - Data Collection Plan.**

(1) The contractor shall collect data on at least ten of the actions identified in Attachment 1 to this SOW. For each such action, data shall be collected from all of the sources listed in Attachment 2. Other sources may be (and probably will need to be) consulted as well. The types of data collected on each action shall include at least those listed in Attachment 3. Primary or original data sources shall be consulted in all cases, and final results shall be based chiefly on a careful analysis of them. Final results shall make essential use of secondary or other non-primary sources only when a careful search of the primary sources has failed to turn up a few critical pieces of information.

(2) The contractor shall devise an efficient data collection plan. The data collection plan shall be efficient in the sense of minimizing the expected cost to obtain the necessary data. Thus, it should be arranged to enhance the efficiency of operations at each scheduled stop, reduce the need for "doubling-back," make the best use of the hours of operation of the data repositories visited, and so forth. The data collection plan is a deliverable item, and shall be in writing. The data collection plan shall include a schedule and itinerary for data collection. It shall describe which selected contractor personnel are to go, where they are to go, when they are to go, who they are to contact at the destination points, how long they are to stay, what data they are to collect, and their fall-back or contingency arrangements if the data anticipated at that location turn out to be unavailable, inaccessible or otherwise unusable.

b. **Task Area 2 - Data Collection, Compilation, Organization and Appraisal.** The contractor shall collect, compile, and organize the collected data into systematized data files for ready reference and analysis. There shall be one such data file for each of the actions listed

in Attachment 1 to this SOW. The contractor shall also carefully and objectively appraise the accuracy, reliability, completeness, general suitability, biases, appropriateness, and other strengths and limitations of the data for assessing the combat performance of anti-armor weapons. These systematized data files are deliverable items, and shall be presented to the COTR concurrently with the final technical report. They shall also be made available at any time during the course of this Task for inspection by the COR, COTR, and others designated by them. Since they are of interest to other investigations beyond the scope of this SOW, the contractor shall (so long as they are in his possession) take adequate measures to safeguard and preserve them intact for future reference. They shall include at least the items specified for inclusion by this SOW.

(1) Pertinent extracts (preferably facsimilies or duplicates) of the original source data, or accurate copies of it, shall be compiled, indexed, cross-referenced, and organized into systematized data files for efficient ready reference and subsequent analysis. All items of information collected in the course of this work shall be preserved and made a permanent part of the systematized data files. Each item of information shall be marked in such a way as to unambiguously and completely describe what information it represents, its bibliographic description, when it was obtained, and by whom (e.g., Anti-Tank Weapons on Hand in the Second Mechanized Infantry Battalion, 30th Infantry Division Personnel Strength at 2400 hours on 1 October 1944; copied from "30th Division Special G-3 Report" dated 08 Oct 44; located in Military Archives of the Slobbovian Kingdom, Capitol Seat, Lower Slobbovia, room number 101, shelf number 26, file number 78, microfilm roll number 1175542, page numbers 17-54; obtained by Jane Doe, 14 Mar 1999; filed 20 Mar 1999 by John Doe). This information shall be entirely adequate for any future investigator to go directly to the exact data source and compare it to the information reported by the contractor's investigator. The systematized data files are deliverable items.

(2) In addition, the selected contractor shall carefully and objectively appraise the accuracy, reliability, completeness, suitability, biases, appropriateness, and other strengths and limitations of the data for assessing the combat performance degradation of anti-armor weapons. There shall be at least one such appraisal for each of the actions listed in Attachment 1 to this SOW. These appraisals shall include an objective consideration and resolution of conflicting information from different sources, and alternative interpretations of the available data considering all available sources. They shall highlight areas in which the data are incomplete, suspect, not completely trustworthy, or otherwise possibly limited for use in assessing combat degradation of anti-armor weapons. These appraisals are deliverable items. They shall be in writing, dated and signed by their preparers, and filed in their corresponding systematized data file. Where limitations are discovered that make the data ill-suited for assessing antiarmor combat effectiveness, the contractor shall attempt to rectify them by collecting additional data. If the limitations cannot be satisfactorily rectified the appraisal shall so state.

(3) On occasion, estimates or judgments may have to be made. However, judgments or estimates may be used only when a conscientious search of primary and secondary sources has failed to determine the issue. Each such judgment or estimate is a deliverable item. It shall be in writing, dated and signed by its preparer, and filed in the corresponding systematized data file. It shall include: (i) an explanation of what is being estimated, (ii) a description of why and how it was estimated (i.e., the reasons and rationale for the estimate arrived at), (iii) the supporting evidence for the estimate arrived at, (iv) the estimate arrived at, (v) the date and name of the person making the estimate.

(4) Each systematized data file, including the data extracts, written appraisal of strengths and weaknesses, written estimates or judgments, and other items indicated in this SOW, is a deliverable item. All systematized data files shall be delivered to the COTR at the

same time as the Final Technical Report. They may be inspected by the COR, COTR, or others designated by them, at any time during the life of this Task.

c. **Task Area 3 - Identification of the Forces Engaged in the Action.** The contractor shall identify exactly the forces engaged on each side in the action. This shall include a description of the (conceptual) spatial, temporal, and organizational boundaries of the (real world) action. These engaged force identifications are deliverable items. They shall be in writing, dated and signed by their preparers, and filed in the corresponding systematized data files. They shall include the initial and final Orders of Battle (O/B) for each of the engaged sides, and all major changes in the O/B of engaged forces during the battle, together with the time at which they occurred. The O/B shall be detailed down to the smallest organizational element identified in the records consulted. The organization for combat (e.g., the creation of task forces and other ad hoc battle groupings formed or reformed either before or during the battle) shall be described in detail. Supporting artillery fires and air support shall be identified by time, target(s) against which delivered, volume, type of munition employed, and areal density of fire to the extent that such information is available in the sources consulted. These force identifications are deliverable items. They shall be in writing, dated and signed by their preparers, and filed in the appropriate systematized data file.

d. **Task Area 4 - Summarize the Data.** The contractor shall prepare a detailed written, tabular, and computerized database summary of each action. This summary shall include at least all the data items listed on the reporting forms provided in Attachment 3 to this SOW. It is important that a common form be used to report the data on each action. Accordingly, the contractor shall design or otherwise prepare a standardized database format, obtain the approval of the COR and COTR, and then use it as the basis for a computerized database that shall summarize the systematized data files in a form convenient for use in assessing combat degradation factors for anti-armor weapons. These data summaries and databases are deliverable items. The written or tabular summaries shall be dated and signed by their preparers, and filed in the appropriate systematized data file. A review version of the computerized data base shall be provided to the COTR concurrently with the draft technical report.

e. **Task Area 5 - Narrative Account of the Action.** The contractor shall prepare a narrative account of each action. It shall include a detailed chronology of events, and maps showing the disposition and displacement of forces during the course of the battle. These narratives are deliverable items. They shall be in writing, dated and signed by their preparers, and filed in the appropriate systematized data file.

f. **Task Area 6 - Technical Reports.** Contractor shall prepare a Draft Technical Report and a Final Technical Report, as indicated in paragraph 6 below.

6. END RESULTS/DELIVERABLES.

a. **Reports and Other Deliverables.** The contractor shall submit the following reports and other deliverables in accordance with the delivery schedule set forth in paragraph 7, and in accordance with the terms set forth in paragraphs 6b and 6c and elsewhere in this SOW.

(1) **Written Monthly Progress Reports.** Each report shall summarize activities and achievements for the preceding period including organizations and personnel contacted and results, status of major tasks including milestones achieved/missed, and any problems encountered or anticipated in meeting contract objectives. It shall list the cumulative effort in manhours and dollars expended and remaining on each task as of the end of the reporting period. It shall outline contractor's plans, objectives and milestones for the next month.

(2) **Oral Progress Briefings.** Formal progress briefings shall, in accord with the

schedule in paragraph 7, be presented to and discussed with the COR, COTR and other interested parties at such locations in the DC area as may be designated by the COTR (but anticipated to be either at CAA, the US Army Center of Military History, the contractor's facilities, or the Pentagon). Each such progress briefing shall be accompanied by a set of annotated Vu-Graph charts providing a permanent record of the presentation. The last of these oral progress briefings shall be a formal briefing describing the findings and accomplishments of the work, the potential for further research (if any), and salient lessons learned from the experience. It shall be presented to and discussed with the COR, COTR and other interested parties at CAA.

(3) **Systematized Data Files and Computerized Database.** The systematized data files and the computerized database shall be submitted concurrently with the Final Technical Report. The systematized data files shall also be made available at any time during the course of the work for inspection by the COR, the COTR, or other persons designated by them. In addition, the computerized database shall be on 5.25-inch double-sided 360K floppy disks fully compatible with and usable by microcomputer database systems available at CAA (e.g., dBASE-III Plus or LOTUS 1-2-3 running on IBM AT or Zenith Z-248 model personal computers).

(4) **Draft Technical Report.** This report shall present a complete and clear exposition of the technical findings and accomplishments of the research, including the specific methods used and any other narrative, technical or tabular information necessary to understand the report.

(5) **Final Technical Report.** A final version of the Draft Technical Report; revised and amended as appropriate, shall be submitted. It shall be accompanied by a set of floppy disks fully compatible with CAA's publications word processing system (which uses 8-inch dual-density floppy disks with the Xerox 3010 Star word processing system).

b. **Report Headings.** The heading of all reports shall contain the following information:

Date of report	Title of report
Contract number	Name of contractor
Contract expiration date	Contractor's Project Director and phone number
Total dollar value	Full title of contract work
Government Sponsor	

c. **Publications Format Required.** The Draft Technical Report and the Final Technical Report provided under this contract shall follow the format specified for CAA Study Reports in the CAA Publications Guide, except that (i) Appendix A shall contain the contractor's quality review board statement specified in paragraph 9 of this SOW in addition to "Study Contributors," (ii) Appendix B shall contain a copy of the Statement of Work in lieu of "Study Directive," and (iii) the cover sheet shall also contain the heading information described in paragraph 6b above. The contractor will be provided a current copy of the CAA Publications Guide for use in preparing the Draft Technical Report and Final Technical Report. An outline of the major features of that format is provided below for reference during proposal preparation:

(1) **Report Cover** (Report Title, number, preparing agency, date, report heading information)

(2) **Disclaimer** - The Draft Final Report and the Final Report resulting from this study shall contain the following disclaimer statement inside their front cover:

"The views, opinions, and findings contained in this report are those of the author(s) and should not be construed as an official Department of the Army position, policy, or decision, unless so

indicated by other official documentation. Comments or suggestions should be addressed to:

Director
US Army Concepts Analysis Agency
8120 Woodmont Avenue
Bethesda, Maryland 20814-2797"

(3) Report Documentation Page (Use of Report Documentation Page, DD Form 1473, at this point of the Draft Final Report and the Final Report is mandatory)

(4) Title page

(5) Study Summary

(6) Table of Contents (including Tables, Figures, and Appendices)

(7) Acknowledgments (optional)

(8) Preface (optional)

(9) Chapter 1 - Executive Summary

(10) Chapters 2-(NEXT-TO-LAST) - (as required to cover the subject)

(11) Chapter (LAST) - Summary of Findings and Observations

(12) Appendix A - List of contributors, and Statement of Contractor's Quality Review Board

(13) Appendix B - Statement of Work

(14) Appendix C - References and sources of information consulted

(15) Appendix D to LAST (technical appendices as required)

(16) Glossary (Include acronyms, abbreviations, short terms, terms unique to this report, symbols, definitions, etc.)

7. SCHEDULE.

a. All technical data items, reports, and other deliverables shall be delivered to the COR and to the COTR. Suggested COTR is Mr. Howard Whitley, CSCA-SAMV, US Army Concepts Analysis Agency, 8120 Woodmont Avenue, Bethesda, MD 20814-2797, phone (301) 295-5228. COR is Mr. Eugene Visco, SFUS-SPM, Room 3C559, The Pentagon, Washington, DC 20310, phone (202) 697-0026.

b. Delivery of all reports and other deliverables shall be made to the COTR in accordance with the following schedule, in which all days are calendar days, and ATA means "After Task Award."

Item No.	Description	Date (on or before)
0001	Conference of Contractor with COTR and other interested parties to review and coordinate study plans	10 days ATA
0002A	Oral Progress Briefing No. 1 and Annotated Briefing Charts (15 copies + Vu-Graphs)	30 days ATA
0002B	Oral Progress Briefing No. 2 and Annotated Briefing Charts (15 copies + Vu-Graphs), including any revisions to previously-submitted materials.	60 days ATA

0002C	Oral Progress Briefing No. 3 and Annotated Briefing Charts (15 copies + Vu-Graphs), including any revisions to previously-submitted materials.	90 days ATA
0002D	Oral Progress Briefing No. 4 and Annotated Briefing Charts (15 copies + Vu-Graphs), including any revisions to previously-submitted materials.	120 days ATA
0002E	Oral Progress Briefing No. 5 (Final) and Annotated Briefing Charts (15 copies + Vu-Graphs), including any revisions to including any revisions to previously-submitted materials.	150 days ATA
0003A	Draft Technical Report (5 Copies; format as prescribed in para 6)	120 days ATA
0003B	Computerized Database (Draft or Review Version)	130 days ATA
0004	Government review or approval of the Draft Technical Report and Draft Computerized Database	140 days ATA
0005A	Final Technical Report (8 copies plus master for printing, in the format prescribed in para 6)	150 days ATA
0005B	The text of the Final Technical Report shall also be provided on one set of 8-inch dual-density floppy disks fully compatible with the Xerox 8010 Star word processing system.	150 days ATA
0005C	Systematized Data Files (one set)	150 days ATA
0005D	Computerized Database (Final Version)	150 days ATA
0006	Government review of Final Technical Report and associated deliverables	150 days ATA
0007	Written Monthly Progress Reports, the first to be provided on the tenth day of the first full month after contract award, and the remainder to be provided not later than the calendar fifth day of each succeeding month until the task ends.	

8. **INSPECTION AND ACCEPTANCE.** Inspection and acceptance of all work performed and all reports or other Technical Data delivered under this contract shall be performed at destination (the US Army Concepts Analysis Agency) by the Contracting Officer's Technical Representative (COTR) and the Contracting Officer's Representative (COR).

a. **Progress Review and Coordination Meetings.** Liaison and direct communication between the contractor and the COTR will be maintained by progress review and coordination meetings. These meetings will be held at such times and places as considered advisable by the COTR, but it is anticipated that they will normally be held either at CAA, at the US Army Center of Military History, at the contractor's facilities, or at the Pentagon. These meetings will provide an opportunity for the COR, COTR, and other interested parties to receive the Oral Progress Briefings and accompanying annotated briefing deliverables listed in paragraphs 6 and 7, to review progress, to determine how much effort and funds have been expended, to discuss the next steps, and to raise any problems or other issues requiring coordination with the COR or COTR. At the conclusion of each of these meetings, the contractor is responsible for preparing a brief memorandum for record summarizing the main points discussed and any decisions reached, and for presenting it to the COTR for approval. Once approved by the COTR, these memoranda become a part of the permanent record of decisions taken during the course of the contract.

b. **Review/Approval of Annotated Briefing Chart Materials.** Government review and approval of the annotated briefing deliverables listed in paragraphs 6 and 7 will be conducted on an informal basis during the progress review and coordination meetings.

c. **Inspection and Review/Approval of the systematized data files** will be conducted from time to time as the work progresses. The COR, COTR, personnel from US Army Center



DEPARTMENT OF THE ARMY
THE CHIEF OF MILITARY HISTORY AND THE CENTER OF
MILITARY HISTORY
WASHINGTON, DC 20314-0200



REPLY TO
ATTENTION OF

DAMH-RAS (870-5e)

28 February 1989

MEMORANDUM THRU

Dr. Drea, Chief, Staff Support Branch, U.S. Army Center of
Military History

LTC Bounds, Chief, Research and Analysis Division, U.S. Army
Center of Military History

FOR Dr. Robert Helmbold, U.S. Army Concepts Analysis Agency (CSCA-
MVM), 8120 Woodmont Avenue, Bethesda, Maryland 20814-2797

SUBJECT: 30 Anti-Tank Engagements for CAA

1. In accordance with verbal agreements between U.S. Army Center of Military History (CMH) and the U.S. Army Concepts Analysis Agency (CAA), the following 30 anti-tank engagements are submitted as candidates for extensive contract research to elicit information pertaining to the combat degradation of anti-tank weapons in combat during World War II.

2. The engagements are at Enclosure A. For the sake of simplicity, in many cases, I often have quoted from the Green Books to describe the action. Major sources of information used to derive an action are included in each engagement precis. The full citations of these battle-specific sources, along with other common sources, are listed at Enclosure B. Records at the National Archives are not listed.

3. A few comments on specific actions:

a. Action #30 is not really a US defensive action. Given the number of tanks cited in MacDonald, The Last Offensive, however, in addition to the "pad factor," I thought it worth including. If "sixty tanks" is not an error in the U.S. Army's official history, the engagement could prove interesting.

b. Action #8 is not mentioned in the appropriate Green Book. Nevertheless, I have listed the action on the list because it was mentioned both in a fairly detailed After Action Report, which I examined at Fort Knox, and a unit history.


4. Several of the engagements are divisible into one or more separate actions, as described by Mr. Rowland of the UK's DOAE in his treatment of Tobruk. In one sense, therefore, there are well over thirty engagements here--a point of which the contractor should be made aware so that research can be conducted accordingly.

DAMH-RAS (870-5e)

SUBJECT: 30 Anti-Tank Engagements for CAA

5. Despite the occasional citation from a source such as a unit history, the contractor still will need to canvass secondary source material to determine what is available.

2 Encls



Stephen J. Loggren

DAC

Historian, Staff Support Branch

30 World War II Anti-Tank Engagements

Compiled by
Stephen J. Lofgren
Staff Support Branch
U.S. Army Center of Military History

28 February 1989

Action 1

a. DATE: "shortly after noon," 17 February 1943
b. LOCATION: Sbeitla, Tunisia
c. UNIT(S) INVOLVED: 601st Tank Destroyer Battalion (Combat Command B, 1st Armored Division)
German: Elements of Group Stenkhoff, 21st Panzer Division

d. DESCRIPTION: 601st TD Battalion was screening the northern flank of CCB, 1st Armored Division, when it was attacked by three groups of German tanks. It was forced to retreat toward Sbeitla.

e. ADDITIONAL COMMENTS: Fought for at least 1/2 hour, but there is no report of knocking out any German armor.

f. MAJOR SOURCE(S) CONSULTED: Howe, Northwest Africa; Howe, Battle History.

Action 2

a. DATE: 17 February 1943, during the latter stages of action 1.

b. LOCATION: Sbeitla, Tunisia

c. UNIT(S) INVOLVED: 2/13th Armored Regiment, and 27th AFA Battalion (CCB, 1st Armored Division)

German: Elements of Group Stenkhoff, 21st Panzer Division

d. DESCRIPTION: The battalion's tanks "had been placed hull down in a wadi from which they could oppose heavier German armor trying to break through. A frontal attack against their position about 1315 by Stenkhoff's much superior tank group gave them the opportunity for which they had hoped. Waiting until the range was very close, they fired a volley which instantly knocked out four or more tanks and completely disrupted the enemy formation. Stenkhoff's force ... pulled back under fire from the 27th Armored Field Artillery Battalion."

e. ADDITIONAL COMMENTS: 2/13 Armored lost ten tanks.

f. MAJOR SOURCE(S) CONSULTED: Howe, Northwest Africa (quoted above); Howe, Battle History.

Action 3

a. DATE: 23 March 1943
b. LOCATION: El Guettar
c. UNIT(S) INVOLVED: 601st TD Battalion; 899th TD Battalion; various battalions of 16th and 18th Infantry, 1st Division.

d. DESCRIPTION: Near dawn the 3/16th Infantry and the 3/18th Infantry encountered the 10th Panzer Division, which was reconnoitering by fire along the northern side of the valley along southern slopes of Djebel el Mcheltat. The 601st TD Battalion was engaged with a "spearhead" until 0700. German attack split into three. One group overran the 32d Field Artillery Battalion and part of the 5th Field Artillery Battalion. The battle centered around Hill 336. "German tank-infantry teams overran the American artillery and infantry positions east of Hill 336 in engagements which brought some hand-to-hand encounters, and heavy American losses." When the German attack reached a mine belt, however, it faltered. Losing 8 tanks to the minefield, and "nearly thirty" to TD fire, the German attack faltered. Pulling back a few miles, the German regrouped for a second attack later in the day, which also failed.

e. ADDITIONAL COMMENTS: 33 TD guns were lost. This action at El Guettar involved over 100 German tanks, and, quoting from Charles Baily's Faint Praise, displayed "almost a classic example of proper tank destroyer employment" (p. 57, re 601st TD Battalion).

f. MAJOR SOURCE(S) CONSULTED: Howe, Northwest Africa, 560-62 (quoted above); Baily, Faint Praise, 56-57; Carter, "Operations of the 1st Battalion, 18th Infantry."

Action 4

- a. DATE: 6 December 1943
- b. LOCATION: Djebel el Guessa
- c. UNIT(S) INVOLVED: Battery C, 27th AFA Battalion (also Company C, 1/6th Armored Infantry)

d. DESCRIPTION: In southern flank along the crests of Djebel el Guessa, elements of 7th Panzer Regiment attacked, with approximately 20 tanks. Company C became "completely disorganized." Battery C, supporting Company C, received the brunt of the armored attack. To quote, Howe, Northwest Africa, Battery C "was forced back into a natural cul-de-sac, and although aided by Battery B, in the end its five old-style half-tracks were destroyed and its survivors captured. But it had won considerable time and claimed to have knocked out at least eight Mark IV German tanks with its 105-mm. howitzers."

- e. ADDITIONAL COMMENTS:
- f. MAJOR SOURCE(S) CONSULTED: Howe, Northwest Africa, 328 (quoted above).

Action 5

a. DATE: 9 July 1944
b. LOCATION: St. Jean-de-Daye
c. UNIT(S) INVOLVED: Company C (esp 1st Platoon), 823d TD Battalion, attached to 30th Infantry Division versus unidentified Tank Company from 743d Tank Battalion, CCB, attached to 30th Infantry Division.

d. DESCRIPTION: The tank company (8 Shermans) made a wrong turn at road intersection, and, while reconnoitering by fire, drove into Company C's position. Company C had heard tracked vehicle noises earlier, inquired via radio regarding American forces in the area, and had been informed that there were no American tanks nearby. After the tanks approached within 600 yards, an engagement ensued. Two tanks were knocked out, at least one TD gun was damaged, and one uncamouflaged half-track was shot from a range of approximately fifteen yards.

e. ADDITIONAL COMMENTS: Visibility was hampered by drizzle and fog. The remaining six tanks managed to reach their objective just in time to be strafed by American planes.

f. MAJOR SOURCE(S) CONSULTED: Blumenson, Breakout and Pursuit, 114-15; Shrader, Amicide, 80-84.

Action 6

a. DATE: 11 July 1944
b. LOCATION:
c. UNIT(S) INVOLVED: 823d Tank Destroyer Battalion; 39th and 47th Infantry Regiments (9th Infantry Division)

d. DESCRIPTION: Co. A, 823d TD Battalion supporting 39th Infantry, and Co. C supporting 47th Infantry. Beginning about 0200 Germans attacked and made gains during the dark hours. After daybreak, the TDs were able to maneuver and drive off the German armor, leaving the infantry undefended. Attack was finally repulsed by 1600 after fighting all day. 47th Infantry suffered 124 casualties, and its 3d Battalion had its C.P. overrun and medical detachment captured.

e. ADDITIONAL COMMENTS: I did not find this incident in the Green Books.

f. MAJOR SOURCE(S) CONSULTED: After Action Report, 823d Tank Destroyer Battalion (photocopy, Armor School Library, Ft. Gillespie, History of the 47th Infantry).

Action 7

- a. DATE: 29 July 1944, "shortly before dawn"
- b. LOCATION: crossroads three miles southwest of Notre Dame-de-Cenilly
- c. UNIT(S) INVOLVED: 1 company armored infantry, 1 tank company of 41st Armored Infantry, Combat Command B 2d Armored Division;

German: Elements of 2d SS Panzer Division, 17th SS Engineer Battalion, 6th Parachute Regiment, and 17th SS Panzer Grenadier Division.

d. DESCRIPTION: "Shortly before dawn, 29 July, about thirty enemy tanks and vehicles, led by an 88-mm. self-propelled gun, approached a crossroads about three miles southwest of Notre Dame-de-Cenilly, where a company of armored infantry and a company of tanks were deployed. German infantrymen crawled along the ditches on both sides of the road as half a dozen enemy tanks and armored vehicles assaulted frontally to force open an escape route. The self-propelled gun in the lead overran the American defensive line and was about to make a breakthrough when rifle shots killed the driver and gunner. With the gun carriage blocking the road, individual American and German soldiers battled for the crossroads until daybreak, when the Germans withdrew, leaving 17 dead and 150 wounded. The motor of the undamaged self-propelled gun carriage was still running, the gun still loaded. The Americans sustained less than 50 casualties and lost a tank and a half-track."

e. ADDITIONAL COMMENTS: a SSG in 41st Armored Infantry received a DSC.

f. MAJOR SOURCE(S) CONSULTED: Blumenson, Breakout and Pursuit (quoted above, 277).

Action 8

a. DATE: 29 July 1944
b. LOCATION: "not far away" from Action 7
c. UNIT(S) INVOLVED: 1 company from a 4th Division infantry battalion attached to 2d Armored Division, 78th AFA Battalion, elements of 702d TD Battalion.

d. DESCRIPTION: "[F]ifteen German tanks and several hundred troops overran an outpost manned by a company of the recently arrived battalion of the 4th Division. The American company commander was killed at once and the infantrymen fell back half a mile into the positions of the 78th Armored Field Artillery Battalion. Two artillery batteries in direct fire, a third in indirect fire, and four guns of the 702d Tank Destroyer Battalion, held off the Germans for thirty minutes until nearby armored infantrymen arrived to re-establish the outpost line. They found seven destroyed Mark IV tanks and counted more than 125 enemy dead."

e. ADDITIONAL COMMENTS:
f. MAJOR SOURCE(S) CONSULTED: Blumenson, Breakout and Pursuit (quoted above, 277).

Action 9

- a. DATE: "shortly before midnight, 29 July 1944"
- b. LOCATION: near St. Denis-le-Gast (German axis from Roncey pocket in the north toward St. Denis-le-Gast)
- c. UNIT(S) INVOLVED: Elements of same units as in Actions 7, 8.

d. DESCRIPTION: German force was approximately 1,000 men and 100 armored vehicles. Broke the American line at one point, and the Americans fell back from St. Denis-le-Gast, regrouped, and continued fighting. Primary aim of Germans, however, was to escape. By morning the town was firmly under U.S. control. German losses were 130 KIA, 124 WIA, 500+ POW, and "at least 25 vehicles, of which 7 were tanks," destroyed.

e. ADDITIONAL COMMENTS: A LTC of 41st Armored Infantry, and a SSG of 2d Armored Division Reserve headquarters received DSCs (the LTC posthumously).

f. MAJOR SOURCE(S) CONSULTED: Blumenson, Breakout and Pursuit, 279.

Action 10

- a. DATE: 7-12 August 1944
- b. LOCATION: Hill 317, Mortain
- c. UNIT(S) INVOLVED: 2/120th Infantry, 30th Division;
Company K from 3/120th Infantry
- d. DESCRIPTION: During the course of the German attack on 7 August 1944, the 2/120th (-), a rifle company from 3/120th Infantry, a Heavy Weapons company, and some anti-tank pieces were surrounded on Hill 317, where they withstood attacks from 17th SS Panzer Grenadier Division (regiment-sized) until they were relieved on 12 August 1944.
- e. ADDITIONAL COMMENTS: The units suffered approx 300 casualties. Five DSC's were awarded. The 2/120th Infantry and Company K received DUCs (the GO's mention the Germans launching "another bitter attack with a large force of tanks"). The hill received massive artillery support throughout.
- f. MAJOR SOURCE(S) CONSULTED: Blumenson, Breakout and Pursuit, 469-75, 488-90; Hewitt, Workhorse of the Western Front; History of the 120th Infantry Regiment (Washington, DC: Infantry Journal Press, 1947); War Department General Orders 3, 8 January 1945. Records of the 120th Infantry and the 30th Infantry division, National Archives.

Action 11

a. DATE: 7-12 August 1944
b. LOCATION: Abbaye Blanche
c. UNIT(S) INVOLVED: 1st Platoon, Antitank Company, 120th Infantry

d. DESCRIPTION: Maintained a roadblock NW of Mortain during the German counterattack. In Breakout and Pursuit, Martin Blumenson credits the roadblock with over 40 German vehicles and tanks killed. WDGO 3, 8 January 1945 (which awarded the unit a DUC) credits the unit with more than 60 killed.

e. ADDITIONAL COMMENTS: The unit history of the 120th infantry says it was the 2d Platoon. Since men filtered to the roadblock, the exact composition is not clearly documented.

f. MAJOR SOURCE(S) CONSULTED: Same as Action 10. Employment of Four Tank Destroyer Battalions in the ETO, Armor School Study, No. 24.

Action 12

- a. DATE: 10 September 1944
- b. LOCATION: Crossing the Moeselle river, Arnaville, France
- c. UNIT(S) INVOLVED: Company C, 1/10th Infantry, 5th Infantry Division
- d. DESCRIPTION: The battalion was preparing a defensive position on a hill. Company C received suppressive fire from 3 German tanks (soon 5), apparently unsupported by infantry, which then attacked toward the company. Company fired bazookas to no effect, and was forced to retreat. The unit suffered many casualties, many caused by tree bursts from tank rounds. Company commander killed. Mortar and artillery fire called in, but attack not stopped until P-47s (from XIX TAC) attacked the tanks.
- e. ADDITIONAL COMMENTS: Company B had similar experience. Company A not really engaged.
- f. MAJOR SOURCE(S) CONSULTED: MacDonald and Mathews, Three Battles, 51-52.

Action 13

- a. DATE: 13 September 1944; from 0100 to around daybreak
- b. LOCATION: Dieulouard Bridgehead, France--north of Nancy along the Moselle river
- c. UNIT(S) INVOLVED: Elements of 317th and 318th Infantry Regiments; 702d Tank Battalion (attached); 313 Field Artillery Battalion (80th Infantry Division) .

German: Elements of 3d Panzer Grenadier Division.

- d. DESCRIPTION: The fighting is divisible into three actions.

1. At 0100 one battalion of 29th Panzer Grenadier Regiment, reinforced by approximately 10 assault guns, struck a roadblock north of Loisy, and then struck Co. F, 318th Infantry, which fought until it received orders to fall back to the south.

2. Main axis of the German armor-infantry attack was from Foret de Facq toward the north flank of American bridgehead across the Moselle. "This force (later estimated at two battalions and fifteen tanks) took the village of Ste. Genevieve ... captured Bezaumont ..." and, in conjunction with the Loisy assault force, attacked toward the bridge sites. The 318th Infantry's C.P. was apparently overrun.

3. "About 0500 a thin line of infantry firing from the ditches along the road between Loisy and the crossroad west of Bezaumont momentarily checked the enemy; but this position was quickly overrun by German tanks that left the ditches full of dead and wounded. However, the fight along the roadside had given time for Lt. Col. J.C. Golden, commanding officer of the 2d Battalion, 318th Infantry, to gather enough men and tanks at le Pont de Mons to meet the final German assault. While the infantry fought from the houses, B Company, 702 Tank Battalion, knocked out the leading enemy tanks and assault guns at ranges as close as two hundred yards." Ultimately, the attack was spent, and at daylight the Germans withdrew to the north, shelled by the 313th FA Battalion, "the only American artillery in the bridgehead."

- e. ADDITIONAL COMMENTS: Cannon Company, 317th Infantry, "was outflanked and very nearly cut off; but the gunners remained at their pieces and did much to check the German attack. For this and later actions in the bridgehead battle the Cannon Company received a Distinguished Unit Citation."

- f. MAJOR SOURCE(S) CONSULTED: Cole, The Lorraine Campaign, 80-82 (quoted above).

Action 14

a. DATE: 18 September 1944
b. LOCATION: Luneville and vicinity, France
c. UNIT(S) INVOLVED: 42d Cavalry Squadron, 2d Cavalry Group, XII Corps

d. DESCRIPTION: "About 0700 ... the advance guard of the 111th Panzer Brigade hit the 42d Cavalry outposts manned by A Troop. The six 75-mm. assault guns from E Troop were rushed forward to meet the Panthers, but the American shells bounced off the heavy frontal armor of the German tanks and three of the guns were destroyed in as many minutes.... Dismounted action by small groups of cavalymen was more effective against the German infantry following the tanks and held the enemy advance guard in check until about 1100." The Squadron's XO organized the defense, "and, as the enemy circled in a tightening noose, finally led the 42d through the narrow gap remaining to the north and reached Luneville."

e. ADDITIONAL COMMENTS: The Germans made a concerted attempt to take Luneville later during the day (using armor), but were defeated. The Cavalry Group commander received the DSC.

f. MAJOR SOURCE(S) CONSULTED: Cole, The Lorraine Campaign (quoted above, p. 221).

Action 15

- a. DATE: 4 November 1944
- b. LOCATION: Hasenfeld and Harscheidt Roads near Schmidt, Germany
- c. UNIT(S) INVOLVED: Companies L and K, 3/112th Infantry, 28th Infantry Division
- d. DESCRIPTION: After dawn, the Germans began to attack the Americans defending Schmidt. After observed infantry infiltration, German forces consisting of approximately five tanks and one infantry battalion attacked down both roads. Bazooka fire seemingly had no effect. The American units were effectively routed by the German armor, and by 1230 Schmidt had been recaptured by the Germans.
- e. ADDITIONAL COMMENTS: This account is based largely on WWII combat interviews.
- f. MAJOR SOURCE(S) CONSULTED: MacDonald and Mathews, Three Battles.

Action 16

- a. DATE: 4 November 1944
- b. LOCATION: Kommerscheidt, Germany
- c. UNIT(S) INVOLVED: 3/110th Infantry, 28th Infantry Division, and other assorted elements
- d. DESCRIPTION: At least five German tanks, with supporting infantry attacked. After a nasty battle, they were knocked out.
- e. ADDITIONAL COMMENTS: This account is based largely on WWII combat interviews.
- f. MAJOR SOURCE(S) CONSULTED: MacDonald and Mathews, Three Battles; MacDonald, Siegfried Line.

Action 17

- a. DATE: 15 November 1944
- b. LOCATION: Distroff, Germany
- c. UNIT(S) INVOLVED: 2/358th Infantry, 90th Infantry Division; elements of 712th Tank Battalion and 773d Tank Destroyer Battalion
German: Kampfgruppe from 25th Panzer Grenadier Division

d. DESCRIPTION: Following a twenty minute artillery bombardment, which started a little before 0700, the Germans attacked from three different directions. One attack, consisting of an infantry battalion, was stopped by artillery fire. As they neared the village, German tanks and assault guns came under heavy fire, eventually driving off (or destroying) much of the armor and leaving the infantry alone to carry on the attack. However, from the account in the official history, the armor apparently returned: "With his battalion pressed back into the buildings by swarms of German infantry and armor, Major Wallace called down 4.2 chemical mortar fire and all available artillery fire on the streets of the town." After four hours of fighting, which the 90th Infantry Division AAR called "the most violent blow of the campaign," the Germans broke off, leaving 150 dead and 4 tanks, 4 assault guns, and 16 half-tracks.

- e. ADDITIONAL COMMENTS:
- f. MAJOR SOURCE(S) CONSULTED: Cole, The Lorraine Campaign, 410-12 (quoted above, 412).

Action 18

- a. DATE: "before daylight," 5 December 1944
- b. LOCATION: Lucherberg, Germany
- c. UNIT(S) INVOLVED: (at the least) Company F, 145th Infantry, 104th I.D.
German: 8th Regiment, 3d Parachute Division

d. DESCRIPTION: "Employing some eight to ten tanks and assault guns and about 450 infantry ... the Germans sneaked into the village through the early morning darkness. For several hours the fighting raged at close quarters. Two of the American tanks and one of the 57-mm. antitank guns were knocked out early in the engagement. One of the towed tank destroyers accounted for two German assault guns which bogged down in the mud on the fringe of the village. Firing upon a German infantryman who apparently was carrying explosives, a squad of American infantry watched in horror as the German literally disintegrated in a loud explosion. An enemy tank laid some direct hits into Company F's command post, killing several men, including the commander and the artillery observer." Nevertheless, thanks to "a noteworthy assist from mortars and artillery, the men of the 415th Infantry were in control of the situation by 0830."

e. ADDITIONAL COMMENTS: German losses included 2 Mark Vs, 2 Mark VIs, and two assault guns. According to 104th Division Artillery AAR, 8,000 rounds were fired in the vicinity of Lucherberg in two hours time.

f. MAJOR SOURCE(S) CONSULTED: MacDonald, Siegfried Line (quoted above, p.514).

Action 19

a. DATE: 17 December 1944
b. LOCATION: Murringen, Belgium
c. UNIT(S) INVOLVED: Company E, 2/394th Infantry, 99th Infantry Division

d. DESCRIPTION: 2/394th Infantry was holding north flank of regimental line at Murringen. At dawn the Germans attacked along the Neuhoof road with tanks, directly attacking Company E. Artillery support and battalion mortar support augmented the Company's use of bazookas, with which it killed three tanks and halted the attack.

e. ADDITIONAL COMMENTS:
f. MAJOR SOURCE(S) CONSULTED: Cole, The Ardennes.

Action 20

- a. DATE: 17 December 1944
- b. LOCATION: Near Krinkelter Wald, Belgium
- c. UNIT(S) INVOLVED: 3/23d Infantry, 2d Infantry Division

d. DESCRIPTION: Battalion was in line with 1/393d Infantry. German tanks and infantry attacked Company I, on the open left flank, which "went to pieces" after expending its ammunition and trying to withdraw. Company K was then attacked, but withdrew successfully, with the exception of one platoon which was destroyed. Two U.S. tanks moved forward to a crossroad near Company K position. Both were knocked out, as were two German tanks. Company L retreated orderly.

e. ADDITIONAL COMMENTS: Two individuals (machine gunners), one each from Company K and I received the Medal of Honor for covering the retreat. The battalion received a DUC.

f. MAJOR SOURCE(S) CONSULTED: Cole, Ardennes, 99-100.

Action 21

a. DATE: 17 December 1944
b. LOCATION: Near Rocherath, Belgium
c. UNIT(S) INVOLVED: 1/9th Infantry 2d Infantry Division
(with Company K, 3/9th Infantry attached); with three guns from
644th TD Battalion

d. DESCRIPTION: Around 1930 three German tanks and perhaps a
- platoon of infantry passed through Company B before they were
recognized as German. At approximately 2000, Company B engaged
more of the same. Two tanks were disabled by mines, two others
by bazookas. 15th FA Battalion provided support. An hour later,
approximately 5-6 German tanks fired at the battalion for a half
hour. A subsequent German infantry attack was cut down. A
combined attack followed, which penetrated the battalion's
position. One crippled tank was doused with gasoline and lit with
thermite grenades. When the attack moved into the Company A
sector, artillery "responded to the urgent call for help and
within three minutes dropped in a concentration that stopped the
assault."

e. ADDITIONAL COMMENTS: Battalion had fifteen extra
bazookas. One individual received the Medal of Honor for
destroying three tanks with bazooka rounds.

f. MAJOR SOURCE(S) CONSULTED: Cole, The Ardennes, 109-10;
After Action Report, 644th TD Battalion (photocopy, Armor School
Library, Fort Knox).

Action 22

a. DATE: The Germans dealt their "hardest blows" on 21 December; however, there were numerous engagements with German armor during the period 19 - 22 December 1944.

b. LOCATION: Dom Butgenbach, Belgium

c. UNIT(S) INVOLVED: 2/26th Infantry, 1st Infantry Division; 5th FA Battalion, 33d FA Battalion (also 1st I.D.); and other elements from the 26th Combat Team. Also, 634th TD Battalion.

For the first day, the 26th RCT was rather isolated, until the 16th Infantry arrived toward evening. The 26th Infantry was tied into the 2d Infantry Division on its left flank. By 21 December, the 26th Infantry had "at least" ten FA Battalions in support, as the batteries of the 2d and 99th Infantry Divisions were tied into the 1st Division FCC.

German: 25th Panzer Grenadier Regiment, 12th SS Panzer Regiment, 12th SS Panzer Division, or elements thereof, were present.

d. DESCRIPTION: About three hours before dawn, 21 December 1944, German artillery began firing against the American front line, and continued until dawn. As Germans began to advance after dawn, American FOs called on "at least" ten battalions of artillery for defensive box barrages, which "succeeded in discouraging the German infantry." German armor attacked the battalion's right, "searching out the automatic weapons which had earlier helped check the infantry assault. ... the BAR and machine gun crews were wiped out." German armor moved through "this gaping hole" and headed for Dom Butgenbach. A Self-Propelled TD (634th TD Battalion) "accounted for seven tanks," and Sherman tanks accounted for two more, before being knocked out. Three German tanks succeeded in entering the village. Two were eventually destroyed by recently arrived 90mm TDs, while the third escaped.

e. ADDITIONAL COMMENTS: Actions against German armor took place 19-22 Dec 44.

Artillery received greatest credit for repelling the attack. Estimate is that over 10,000 rounds of artillery were fired in an 8 hour period.

f. MAJOR SOURCE(S) CONSULTED: Cole, The Ardennes, 129 ff. (esp 131-33); CPT D. Rivette, "The Hot Corner at Dom Butgenbach," Infantry Journal (October 1945): 19-23.

Action 23

- a. DATE: 21 December 1944
- b. LOCATION: Hotton, Belgium
- c. UNIT(S) INVOLVED: Primarily 51st Combat Engineer Battalion
- d. DESCRIPTION: Major activity took place defending a bridge through Hotton. Individual actions--a single U.S. tank, a PVT manning a 37 mm. gun, and a PVT with a bazooka--were most significant.
- e. ADDITIONAL COMMENTS: Hechler study contains great detail on the Battalion's deployment in its defensive positions (including map coordinates). A good study of a small-unit action.
- f. MAJOR SOURCE(S) CONSULTED: Ken Hechler, Holding the Line; Cole, Ardennes; Beck, et. al., Corps of Engineers: The War Against Germany.

Action 24

- a. DATE: 2300 20 December 1944
- b. LOCATION: Stoumont, Belgium
- c. UNIT(S) INVOLVED: 1/119th Infantry, 30th Infantry Division, + 1 tank company from 740th Tank Battalion
- d. DESCRIPTION: In the early evening the Americans captured a sanatorium in the town. The Germans counterattacked just before midnight with armor and infantry, and recaptured the sanatorium, but were unable to breakthrough due to "accurate and incessant shellfire."
- e. ADDITIONAL COMMENTS: Germans tried again at 210530 Dec, but were turned back by artillery fire and tank reinforcements.
- f. MAJOR SOURCE(S) CONSULTED: Cole, The Ardennes, 349-51

Action 25

a. DATE: 3 January 1945
b. LOCATION: Longchamps, Belgium
c. UNIT(S) INVOLVED: 2d Battalion, 502d Parachute Infantry, 101st Airborne Division; 81st AAA Battalion.

d. DESCRIPTION: German tanks and infantry attacked. They achieved some penetration during the three hour battle before being repulsed. The 502d suffered heavy casualties, partially due to its inability to combat the German armor. Unit history estimates 30-40 German tanks were involved, 11 of which provided overwatch fire during the battle. Four of the 2d battalion's five 57-mm. guns were knocked out. "The antitank gunners of Battery C, 81st AAA Battalion were credited with knocking out ten Mark IV tanks.... Seven of these were knocked out by one crew."

e. ADDITIONAL COMMENTS: Unit history (page 626) gives tank kill credits, and estimates that two-thirds of attacking armor was destroyed or damaged.

f. MAJOR SOURCE(S) CONSULTED: Rapport and Northwood, Rendezvous With Destiny, 622-26 (quoted above, 626); MacDonald, Last Offensive, 36.

Action 26

- a. DATE: 4 January 1945
- b. LOCATION: Longchamps, Belgium
- c. UNIT(S) INVOLVED: Elements of 101st Airborne Division;
German: 104 Panzer Grenadier Regiment, 15th Panzer Grenadier Division
- d. DESCRIPTION: German infantry and armor (approximately eleven tanks and self-propelled assault guns) attacked Longchamps, the brunt of the attack falling on 1/327th Parachute Infantry, which had relieved the 1/502d. They were prevented from seizing town by paratroopers supported with intense artillery fire. According to MacDonald, the division claimed thirty-four tanks as destroyed; however, it seems more likely that this was a two-day total.
- e. ADDITIONAL COMMENTS: While this was "the heaviest coordinated attack launched against [the division's] positions to date," the division had been forewarned by a German PW.
- f. MAJOR SOURCE(S) CONSULTED: MacDonald, Last Offensive, 36-37; Rapport and Northwood, Rendezvous With Destiny, 627-30.

Action 27

a. DATE: three actions, commencing at dawn, noon, and 1430 on 18 January 1945

b. LOCATION: Butzdorf and Tettingen, Germany

c. UNIT(S) INVOLVED: Elements of 94th Infantry Division;
German: 11th Panzer Division

d. DESCRIPTION: German force attacked out of Orscholz Switch, with axis of attack from Sinz through Butzdorf and Tettingen. Force consisted of 2 Panzer Grenadier regiments, 30 MARK IV tanks, and 20-30 assault guns. Following a twenty minute bombardment, the German force attacked both towns. The action lasted about an hour. American forces used mines, 57-mm. guns, and bazookas against the German armor. "Shortly after 0900 the Germans fell back, but just before noon ten tanks again emerged from Sinz, took up hull defilade positions and persistently pounded the two villages. At 1430 three fresh battalions of German infantry launched a fresh assault, this time primarily directed at Butzdorf," where a single American infantry company became isolated. The American company retreated after nightfall, leaving the Germans in control of Butzdorf, while the 284th and 919th FA Battalions provided covering fire.

e. ADDITIONAL COMMENTS:

f. MAJOR SOURCE(S) CONSULTED: Byrnes, History of the 94th Infantry Division, 120-28; MacDonald, Last Offensive, 119-20 (quoted above, 120).

Action 28

- a. DATE: 24 January 1945
- b. LOCATION: Maison Rouge, at Ill river, near SE corner of Colmar forest
- c. UNIT(S) INVOLVED: Company I, 3/15th Infantry, 3d Infantry Division
- d. DESCRIPTION: Company occupied a crossroad on the unoccupied side of Ill river, beyond the bridgehead (where Company K was deployed). At 0800 the Germans attacked Company I with 13 assault guns, approximately 1 company of infantry, and a few tanks and other vehicles. The company was overrun (some members literally)--3d platoon largely captured--and retreated to Company K position.
- e. ADDITIONAL COMMENTS: Bridge had broken the previous day, thereby denying American armor support, except fire by tanks and TDs from across river. Battle continued until mid-afternoon, when 1/15 Infantry counterattacked with armor and drove off the Germans.
- f. MAJOR SOURCE(S) CONSULTED: Clarke draft manuscript, "Riviera to the Rhine," chapter 29.

Action 29

- a. DATE: 23-24 February 1945
- b. LOCATION: Bolsar, Germany
- c. UNIT(S) INVOLVED: 406th Infantry Regiment, 102d Infantry Division;
German: 363d Infantry Division (plus augmentations)

d. DESCRIPTION: Bolsar was attacked "at least seven different times. The first thrust hit just before 2100, employing a mixed force of about twenty assault guns and tanks accompanied by about 150 infantry." Artillery fire dispersed the first attack; however, later thrusts penetrated into the town. Infantry killed four MARK Vs with bazookas. "What the Americans reckoned as the fourth try brought the gravest crisis. Three hours before dawn on 24 February, tanks and infantry swarmed into the village, While the Americans huddled in cellars, forward observers called down artillery fire on their own positions. By daylight the Germans had fallen back, and a count revealed a surprisingly low total of thirty American casualties."

e. ADDITIONAL COMMENTS:

f. MAJOR SOURCE(S) CONSULTED: MacDonald, Last Offensive, 155 (quoted above).

Action 30

- a. DATE: 30 March 1945
- b. LOCATION: Kirchboren and other points, six miles from Paderboren
- c. UNIT(S) INVOLVED: "Task Force Richardson" (elements of 36th Armored Infantry and the 32d Armored), 3d Armored Division

d. DESCRIPTION: "Hardly had Task Force Richardson resumed the advance when the point bumped into a defensive line hastily manned during the night by students from an SS panzer reconnaissance training battalion and an SS tank training replacement regiment, banded together with support from an SS tank replacement battalion of approximately sixty Tiger and Panther tanks into a unit named SS Ersatzbrigade Westfalen. By midafternoon Richardson's men had forced their way into a town [Kirchboren] only six miles short of Paderboren. There they fought the rest of the day and much of the night against at least two tanks and more than 200 Germans, most of whom employed Panzerfaust antitank weapons with suicidal fervor."

e. ADDITIONAL COMMENTS: It is surprising that there is not more detail on what happened to all those tanks. The unit history cited below does not mention the sixty tanks. It does, however, mention a new German tank destroyer mounting a 128-mm. gun, and mentions the two-tank (destroyed by tank destroyers of the 703d ID Battalion) action.

f. MAJOR SOURCE(S) CONSULTED: MacDonald, Last Offensive, 352 (quoted); Spearhead in the West, 142-44.

ENCLOSURE B

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United States Army in World War II (Washington, DC: Office of the
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the West (1957)

Martin Blumenson, Breakout and Pursuit (1961)

Hugh M. Cole, The Lorraine Campaign (1950)

Charles B. MacDonald, The Siegfried Line (1963)

Hugh M. Cole, The Ardennes: Battle of the Bulge (1965)

Charles B. MacDonald, The Last Offensive (1973)

Charles B. MacDonald and Sidney T. Mathews, Three Battles:
Arnaville, Altuzzo, and Schmidt (1952)

Wilson, John B. comp. Armies, Corps, Divisions and Separate
Brigades. Washington, D.C.: Center of Military History, 1987.

ATTACHMENT 2

LIST OF SOURCES OF INFORMATION TO BE CONSULTED

1. All sources listed cited in Attachment 1 to the SOW shall be consulted for information on the action with which they are associated.
2. In addition, the archives and other sources listed below shall be searched for information they may contain on any of the actions listed in Attachment 1 to the SOW.
 - a. National Archives and Record Service, Eighth Street and Pennsylvania Avenue, Washington, DC 20408. Phone 202-523-3134.
 - b. Washington National Records Center, Suitland, Maryland.
 - c. US Army Center of Military History, Pulaski Building, 20 Massachusetts Avenue, NW, Washington, DC 20001. Phone 272-0301.
 - d. US Army Military History Institute, Carlisle Barracks, Pennsylvania 17013.
 - e. US Military Academy (History Department and Library), West Point, NY 10996.
 - f. US Army Infantry Center and School, Ft. Benning, GA.
 - g. US Army Armor Center and School, Ft. Knox, KY.
 - h. US Army Artillery Center and School, Ft. Sill, OK.
 - i. US Army Combat Studies Institute, Fort Leavenworth, Kansas 66027.
 - j. Commandant, US Air War College, Maxwell Air Force Base, AL 36112-5532.
 - k. Commander, US Army Combat Developments Experimentation Command, Fort Ord, CA 93941.
 - l. German Archives (especially, but not necessarily limited to, those in Frieberg)
 - m. Branch Journals
 - n. Unit Histories
 - o. Military Periodicals
 - p. Individual and Unit Citations
 - q. Morning Reports
 - r. Histories written by independent historians
3. A DTIC search for relevant information shall be requested and paid for by the contractor.
4. Additional sources may be consulted as necessary to complete the work called for by this SOW.

ATTACHMENT 3

DATA ITEMS AND DATA REPORTING FORMS

1. The items of data listed below are of primary importance. Every effort shall be made to complete all such items of data for at least ten of the actions listed in Attachment 1 to the SOW.

a. (See attached list of DOAE list of data items).

b. (See attached draft data collection forms prepared by US Army Center of Military History).

2. The following items of data are important to assessing the combat performance of antiarmor weapons, and will also be useful for other purposes. Any such information discovered in the course of this work should also be recorded and made a permanent part of the systematized data files.

a. Local weather and time-of-day conditions, particularly those that affect light and visibility conditions.

b. Extent of warning of approaching attack, and intelligence on its size and composition.

c. Quality of the preparation of the defensive position (protection, cover, concealment, prepared alternate positions).

d. Size of the on-hand supply of suitable types of ammunition.

e. Air and artillery support of the attacking armor elements, and the extent to which this suppressed defensive fires.

f. Size and activity of the infantry accompanying the armor attack.

g. Number of overwatching versus maneuvering tanks.

h. Type of attack maneuver used (e.g., advance by bounds, by echelon, dash, etc.).

i. Disposition of defensive weapons and their location relative to the attack.

j. Maximum effective ranges of the attacking and defensive weapons considering the nature of their targets and other local conditions.

k. Roughness and vegetation of the local terrain.



MINISTRY OF DEFENCE

Defence Operational Analysis Establishment

Broad Oaks Parvis Road West Byfleet Weybridge Surrey KT14 6LY

Telephone Army Network Byfleet Military ext
Civil Network (STD Code 09323) Byfleet 41199

Director CAA
8120 Woodmount Avenue
BETHESDA Maryland
For attn: Special Assistant for Model Validation,
Mr Dick Lester

Your reference

Our reference

D/DOAE/44/670
Date

16 February 1988

Dear Mr. Lester

ANALYSES OF COMBAT DEGRADATION

Following our discussions earlier last year, we were interested to receive Mr Vandiver's letter of 8 December to Director DOAE reopening this issue.

In principle we remain keen to pursue this on the original basis proposed by DUSA-OR, that you fund a US contractor while we act as joint technical authority to supervise an agreed programme. The copies of DOAE Memorandum M83108, reporting on the equivalent small arms analysis, have now been sent to DUSA-OR.

The outline of the approach annexed would be as below:

a. Collect historical data on samples of WWII defence with anti-tank weapons, classified by towed and SP weapons, and tanks. (US archive data could be pooled with UK data, already being compiled, to build up an adequate, broad based sample).

b. Examine these data in comparison with anti-armour trials to establish effect of target availability, suppressive fire, weapon type, range of engagement and defence nationality.

c. Collect historical data on two sets of modern combat including Middle East wars. This would cover:

(1) Small arms defence for comparison with M83108 and to establish national variations for participants covered by (2) below.

(2) ATGW and other anti-tank (inc tanks to explore similarities and differences from relationships established from WWII data.

We are using Ex CHINESE EYE III data to aid comparisons at (b); the use of US data from, inter alia, ARCOMS II, TETAMS III and NTC battles may also provide an extra basis for comparison and understanding.

In view of the value of establishing a realistic estimate of the relative degradation of anti-armour systems and the relatively scarce real use of newer systems the approach outlined above is seen as the necessary route of investigation.

I shall be visiting Washington in late April with Dudley Edwards, Superintendent Field Studies and hope we can discuss progressing this with you on Thursday 28 April.

Yours sincerely

David Rowland

DAVID ROWLAND

DR/JMC

STATEMENT OF WORK REQUIRED ON ANTI-ARMOUR DEGRADATION

A1. Phase I Collect data on samples of World War II anti-tank defences, constructed to include sets of actions including the following, in non urban areas.

- a. US Towed anti-tank guns, all 57mm if possible.
- b. German Towed anti-tank guns, 50 - 88mm.
- c. " -S.P. anti-tank guns - open topped (HARDER/NASHORN)
- d. " " " " " - fully armoured (Stu.G.III, IV HETZER, JAGD PANTHER)
- e. US S.P anti-tank guns - open turreted (M.10, M18, M.36)
- f. " " " " " (G.M.C. M3)
- g. US Tanks divided by type.
- h. German Tanks. " "
- i. US Bazooka.
- j. German Panzerfaust.

A2. Each action must have the following data:

- a. No of defence anti-tank weapons present and in visual contact with enemy; plus deployment qualification.*
- b. No of enemy tanks (+SP guns) attacking, including those giving fire support.
- c. No of attack tank (+SP guns) casualties and/or hit.
- d. Presence of infantry on each side and their strengths.
- e. Definition of artillery bombardment of defence positions - if applied.
- f. " " " " " of course of action including who withdrew or lost.

In addition, the following are desirable:

- g. No of rounds fired by any or all defence weapons.
- h. Defence weapons/user casualties.
- j. Range data.
- k. Maps of actions.
- l. Obstacles, met. data and time of day.

*Attack war diary data only will not be adequate for unsuccessful attacks, as defence strength may be wrongly assessed.

A3. At least 25 actions are estimated to be required in categories a and b, g and h, of para A1 with similar samples in the other cases desirable. Of these one group requires 50 spread over a range of force ratio. Any of category (a) in the Ardennes should be treated as a separate sub-category beyond the basic 25.

A4. A further sample of equivalent to (a) and/or (g) is also required with Italian or Russian weapons in defence.

A5. Given the data required and the low level of actions which occurred, it is anticipated that the data will relate to platoon/troop sized defence generally, sometimes up to (anti-tank) company size defence.

A6. Phase II (A) Analyse data in comparison with armour trials data for effect of:

force ratio

defence weapon group

attack suppression

correcting for broad categories of weapon/target combination and
infantry presence.

(B) Compare with equivalent DOAE analysis and consider whether data

can be pooled.

A7. Phase III Collect data on small arms battles as follows:

- a. U.S. infantry - defence World War II
- b. German " " " " "
- c. Israeli " " through Arab/Israeli wars
(more than one war)
- d. Egyptian " " " " "
- e. Syrian " " " " "

A8. Each action should have the following data:

- a. No of defence infantry, nos and types of weapons,
including supporting indirect fire.
- b. No of attack infantry, no. of waves.
- c. Attack AFV.
- d. Defence anti-tank weapons.
- e. Definition of artillery bombardment of defensive positions, if applied.
- f. Attack casualties.
- g. Narrative of course of actions, including who withdrew or lost.

In addition the following are desirable.

h. Defence casualties.

j. Range data.

k. Maps of action

l. Obstacles, met and time of day.

A9. Phase IV Analyse data to compare with analysis in DOAE Memo M83108.

A10. Phase V Collect data on samples of post - World War II anti-tank defences - including the following:

a. Man carried ATGW in defence by weapon type and nationality of user.

b. Vehicle mounted " " " " " " " "

c. Tanks in defence " " " " " " " "

d. Infantry close range anti tank weapons (eg RPG7) " " "

e. Any other categories as in World War II (eg SU100, Archer)

In each group desirable samples are 25 for each nationality and weapon type, but it is acknowledged that this may not be obtainable.

A11. Phase VI Analyse data from Phase V to compare with those from Phase II and IV to estimate effectiveness of modern anti-tank weapons.

24/2

[illegible]

APPENDIX C
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Ninth Tank Destroyer Group After Action Report, September-November 1944,
January-May 1945 (ETO) [Call Number 809 T 501].

Corps (12th Corps) - After Action Report Ninth Tank Destroyer Group, [Call
Number 809 T 501].

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19 September - 1 October 1944, [Call Number 812 C 307].

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2 August 1945, [Call Number 820 AG 501].

Twenty-third Tank Destroyer Group After Action Report, December 1944-May
1945, [Call Number 823 T 501].

607th Tank Destroyer Battalion

After Action Report 607th Tank Destroyer Battalion 8 September 1944, [Call
Number 8607 TD 101 AAR #575 U 847.6].

607th Tank Destroyer Battalion After Action Report, June 1944 - April 1945
[Call Number 8607 TD 101].

609th Tank Destroyer Battalion

609th Tank Destroyer Battalion After Action Report, October 1944 - January 1945, [Call Number 8609 TD 101].

609th Tank Destroyer Battalion After Action Report, January 1945, [Call Number 8609 TD 101 AAR 847.7].

610th Tank Destroyer Battalion

610th Tank Destroyer Battalion After Action Report August-October 1944, December 1944, [Call Number 8610 TD 101].

612th Tank Destroyer Battalion

612th Tank Destroyer Battalion After Action Report December 1944, [Call Number 8612 TD 101 AAR #452 847.9].

612th Tank Destroyer Battalion After Action Report, July - December 1944, February 1945, April - May 45, [Call Number 8612 TD 101].

630th Tank Destroyer Battalion

630th Tank Destroyer Battalion After Action Report January 1945, [Call Number 8630 TD 101 AAR #615 U 847-12].

630th Tank Destroyer Battalion After Action Report, August - November 1944, January - May 1945, [Call Number 8630 TD 101].

644th Tank Destroyer Battalion

644th Tank Destroyer Battalion After Action Report December 1944.

644th Tank Destroyer Battalion After Action Report, July 1944 - 9 May 1945 [Call Number 8644 TD 101].

691st Tank Destroyer Battalion

691st Tank Destroyer Battalion After Action Report, January 1945, March - May 1945, [Call Number 8691 TD 101].

772d Tank Destroyer Battalion

772d Tank Destroyer Battalion After Action Report, December 1944 - April 1945, [Call Number 8772 TD 102].

802d Tank Destroyer Battalion

802d Tank Destroyer Battalion After Action Report, August 1944 - April 1945 [Call Number 8802 TD 101].

805th Tank Destroyer Battalion

805th Tank Destroyer Battalion After Action Report, January 1943 - April 1945, [Call Number 8805 TD 101].

807th Tank Destroyer Battalion

807th Tank Destroyer Battalion After Action Report, October 1944 - March 1945, [Call Number 8807 TD 101].

808th Tank Destroyer Battalion

808th Tank Destroyer Battalion After Action Report, September 1944 - May 1945, [Call Number 8808 TD 101].

817th Tank Destroyer Battalion

817th Tank Destroyer Battalion After Action Report, January - April 1945 [Call Number 8817 TD 101].

821st Tank Destroyer Battalion

821st Tank Destroyer Battalion After Action Report, January - December 1944, February - April 1945, [Call Number 8821 TD 101].

821st Tank Destroyer Battalion After Action Report November 1944, [Call Number 8821 TD 101 AAR #97 347-56].

823d Tank Destroyer Battalion

823d Tank Destroyer Battalion After Action Report, January - August 1944, December 1944 - April 1945, [Call Number 8823 TD 101].

823d Tank Destroyer Battalion After Action Report, August 1944, [Call Number 8823 TD 101 (AAR #588U)].

After Action Report, December 17-26 1944, [Call Number 8823 TD 101 823d TD Bn AAR (AAR #588 U)].

After Action Report, January 14-18 1945, [Call Number 8823 TD 101 823d TD Bn AAR (AAR #588 U)].

824th Tank Destroyer Battalion

824th Tank Destroyer Battalion After Action Report, August 1942 - September 1945, [Call Number 8824 TD 101].