



Victory in Europe, 1944-1945

Student Name _____ Date _____

The Normandy Invasion—Document Analysis

Document 1:

Report by Joint War Plans Committee, Invasion of the European Continent from Bases in the Mediterranean in 1943-1944, May 8, 1943: <http://www.fdrlibrary.marist.edu/psf/box2/a18e02.html>

2. The courses of action examined and conclusions reached are indicated below:

- a. Invade Europe via the IBERIAN PENINSULA [Spain and Portugal]
 - 1) Rejected. Not suitable strategically [Spain was a neutral power during World War II]
- b. Invade Europe via SOUTHERN FRANCE
 - 1) Retained for further examination. Suitable—would create the “Second Front.” Feasibility questionable—would require seizure of SARDINIA and CORSICA; adequate land-based air cover cannot be provided and doubtful if shipping capabilities could support an operation of this magnitude until late 1944. Acceptable only if we are prepared to face heavy losses in ships and personnel.
 - 2) The inherent decisive possibilities warrant retention for further examination.
- c. Invade EUROPE via ITALY and SOUTHERN FRANCE
 - 1) Rejected. Suitable only in eliminating ITALY from the war. Not suitable as ITALY is not a vital AXIS area, would require substantial diversion of shipping to maintain Italian economy. Perhaps feasible but large forces required (estimated 40 to 50 divisions), adequate land-based air cover not available, and the shipping problem comparable to or worse than SOUTHERN FRANCE. Chances of a successful conquest of ITALY appear acceptable, but further exploitation toward FRANCE extremely doubtful.
- d. Invade EUROPE via ITALY and HUNGARY or GREECE and YUGOSLAVIA
 - 1) Rejected. The conclusion reached in c. above is equally applicable.
- e. Invade EUROPE via EASTERN MEDITERRANEAN – TURKEY, GREECE and the AEGEAN ISLANDS
 - 1) Rejected. Not logistically practicable [Turkey was a neutral power during World War II].
- f. Reexamination of “Invade EUROPE via SOUTHERN FRANCE.”
 - 1) Rejected. Reexamination in connection with other courses of action with a view to improving our chances of success indicate little hope of achieving such a position.

3. Conclusion

The application of the tests of suitability, feasibility, and acceptability to the various routes from the MEDITERRANEAN region for reentry to the Continent, and there to engage the AXIS armies in decisive combat, rejects them all as being unsound.

Questions	Answers
<p>Military leaders rejected an invasion of Europe via the Mediterranean. After reading their analysis in the following document, was their opinion justified? Why or why not?</p>	
<p>Italy, though it was an Axis power, was not chosen as a site for an invasion of Europe? Why?</p>	

Document 2:

Report by Joint War Plans Committee, Invasion of the European Continent from the United Kingdom in 1943-1944, May 8, 1943: <http://www.fdrlibrary.marist.edu/psf/box2/a18d02.html>

[...]

7. The two most promising areas for assault operations, the CAEN and CONTENTIN PENINSULA sectors, will afford port facilities for a build up in 12 months of 912,000 men. By extending this bridgehead to include the SEINE RIVER and the ports of LE HAVRE and ROUEN, the build up in 12 months would be 4,012,000 men, or about 100 divisions. This force would be capable of major operations.

[...]

9. It is recommended that:

- a. The bomber offensive be given first priority in build up and its execution be facilitated.
- b. As the bomber offensive progresses, its effects should be continuously examined and integrated with other factors; the results of these examinations to be used in determining the date for cross-channel operations.
- c. A balanced invasion force be built up in the UNITED KINGDOM as rapidly as possible for the purpose of an early invasion in the event of a collapse of GERMANY.
- d. Production in landing craft be increased by:
 - 1) Increasing the tailing on program of LST's [a type of landing craft] to 12 per month for a total of 108 additional LST's.
 - 2) Increasing the present rate of LCI(L)'s [another type of landing craft] from 16 per month to 20 per month and the present program from 192 to 300.

- e. Planned allocations of UNITED STATES landing craft to the PACIFIC be changed as follows (figures in parentheses represent allocations as presently planned):

	1943		1944		
	3 rd Quarter	4 th Quarter	1 st Quarter	2 nd Quarter	3 rd Quarter
LST	25 (38)	0 (22)	0 (0)	35 (0)	0 (0)
LCI(L)	0 (34)	0 (36)	30 (36)	60 (24)	40 (0)

- f. With the exception of the above allocations, all UNITED STATES production be sent to the ATLANTIC area during this period.
- g. The target date of April 1, 1944 be accepted for operations from the UNITED KINGDOM. These operations to be conducted with the forces available in the UNITED KINGDOM on 1 January 1944. The target date coincides with the completion of the fourth phase of the bomber offensive and is subject to revision in the light of the results obtained.
- h. The area selected for the assault contain sufficient port capabilities to build up the 100 division force required for major operations on the Continent.

Question	Answer
Why would a bombing campaign be instituted prior to a land invasion? How would the results of this affect the outcome of the land invasion?	
Why was the date of April 1, 1944 chosen? Was it possible to achieve this goal?	
Where did Military planners feel was the best site to land in France? What were the benefits of this location?	

How would the planned invasion of Europe affect the war in the Pacific?	
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Document 3:

Digest of Operation "Overlord": http://www.army.mil/cmh-pg/books/wwii/7-4/7-4_a.HTM

Object.

1. The object of Operation "Overlord" is to mount and carry out an operation, with forces and equipment established in the United Kingdom, and with target date the 1st May, 1944, to secure a lodgement on the Continent from which further offensive operations can be developed. The lodgement area must contain sufficient port facilities to maintain a force of some twenty-six to thirty divisions, and enable that force to be augmented by follow-up shipments from the United States or elsewhere of additional divisions and supporting units at the rate of three to five divisions per month.

Selection of a Lodgement Area.

[...]

3. A study of the beaches on the Belgian and Channel coasts shows that the beaches with the highest capacity for passing vehicles and stores inland are those in the Pas de Calais, and the Caen-Cotentin area. Of these, the Caen beaches are the most favourable, as they are, unlike the others, sheltered from the prevailing winds. Naval and air considerations point to the area between the Pas de Calais and the Cotentin as the most suitable for the initial landing, air factors of optimum air support and rapid provision of airfields indicating the Pas de Calais as the best choice, with Caen as an acceptable alternative.

[...]

5. As the area for the initial landing the Pas de Calais has many obvious advantages such that good air support and quick turn round for our shipping can be achieved. On the other hand, it is a focal point of the enemy fighters disposed for defense, and maximum enemy air activity can be brought to bear over this area with the minimum movement of his air forces. Moreover, the Pas de Calais is the most strongly defended area on the whole French coast. The defenses would require very heavy and sustained bombardment from sea and air: penetration would be slow, and the result of the bombardment of beach exits would severely limit the rate of build-up. Further, this area does not offer good opportunities for expansion. It would be necessary to develop the bridgehead to include either the Belgian ports as far as Antwerp or the Channel ports Westwards to include Havre and Rouen. But both an advance to Antwerp across the numerous water obstacles, and a long flank march of some 120 miles to the Seine ports must be considered unsound operations of war unless the German forces are in a state not far short of final collapse.

6. In the Caen-Cotentin area it would be possible to make our initial landing either partly on the Cotentin Peninsula and partly on the Caen beaches, wholly in the Cotentin or wholly on the Caen beaches. An attack with part of our forces in the Cotentin and part on the Caen beaches, is, however, considered to be unsound. It would entail dividing our limited forces by the low-lying marshy ground and intricate river system at the neck of the Cotentin Peninsula; thus exposing them to defeat in detail.

7. An attack against the Cotentin Peninsula, on the other hand, has a reasonable chance of success, and would ensure the early capture of the port of Cherbourg. Unfortunately, very few airfields exist in the Cotentin, and that area is not suitable for rapid airfield development. Furthermore, the narrow neck of the Peninsula would give the Germans an easy task in preventing us from breaking out and expanding our initial bridgehead. Moreover, during the period of our consolidation in the Cotentin the Germans would have time to reinforce their coastal troops in the Caen area, rendering a subsequent amphibious assault in that area much more difficult.

8. There remains the attack on the Caen beaches. The Caen sector is weakly held; the defenses are relatively light and the beaches are of high capacity and sheltered from the prevailing winds. Inland the terrain is suitable for airfield development and for the consolidation of the initial bridgehead; and much of it is unfavourable for counter-attacks by panzer divisions. Maximum enemy air opposition can only be brought to bear at the expense of the enemy air defense screen covering the approaches to Germany; and the limited number of enemy airfields within range of the Caen area facilitates local neutralization of the German fighter force. The sector suffers from the disadvantage that considerable effort will be required to provide adequate air support to our assault forces and some time must elapse before the capture of a major port.

After a landing in the Caen sector it would be necessary to seize either the Seine group of ports or the Brittany group of ports. To seize the Seine ports would entail forcing a crossing of the Seine, which is likely to require greater forces than we can build up through the Caen beaches and the port of Cherbourg. It should, however, be possible to seize the Brittany ports between Cherbourg and Nantes and on them build up sufficient forces for our final advance Eastwards.

Provided that the necessary air situation can first be achieved, the chances of a successful attack and of rapid subsequent development are so much greater in this sector than in any other that it is considered that the advantages far outweigh the disadvantages.

The Lodgement Area Selected.

9. In the light of these factors, it is considered that our initial landing on the Continent should be effected in the Caen area, with a view to the eventual seizure of a lodgement area comprising the Cherbourg-Brittany group of ports (from Cherbourg to Nantes).

[...]

Preliminary Phase.

21. During the preliminary phase, which must start forthwith, all possible means including air and sea action, propaganda, political and economic pressure, and sabotage, must be integrated into a combined offensive aimed at softening the German resistance. In particular, air action should be directed towards the reduction of the German air forces on the Western front, the progressive destruction of the German economic system and the undermining of German morale.

[...]

The Assault.

24. After a very short air bombardment of the beach defenses three assault divisions will be landed simultaneously on the Caen beaches, followed up on D Day by the equivalent of two tank brigades (United States regiments) and a brigade group (United States regimental combat team). At the same time, airborne forces will be used to seize the town of Caen; and subsidiary operations by commandos and possibly by airborne forces will be undertaken to neutralize certain coast defenses and seize certain important river crossings. The object of the assault forces will be to seize the general line Grandcamp-Bayeux-Caen.

[...]

Major Conditions Affecting Success of the Operation.

32. It will be seen that the plan for the initial landing is based on two main principles—concentration of force and tactical surprise. Concentration of the assault forces is considered essential if we are to ensure adequate air support and if our limited assault forces are to avoid defeat in detail. An attempt has been made to obtain tactical surprise by landing in a lightly defended area—presumably lightly defended as, due to its distance from a major port, the Germans consider a landing there unlikely to be successful. This action, of course, presupposes that we can offset the absence of a port in the initial stages by the provision of improvised sheltered waters. It is believed that this can be accomplished.

33. The operation calls for a much higher standard of performance on the part of the naval assault forces than any previous operation. This will depend upon their being formed in sufficient time to permit of adequate training.

34. Above all, it is essential that there should be an over-all reduction in the German fighter force between now and the time of the surface assault. From now onwards every practical method of achieving this end must be employed. This condition, above all others, will dictate the date by which the amphibious assault can be launched.

35. The next condition is that the number of German offensive divisions in reserve must not exceed a certain figure on the target date if the operation is to have a reasonable chance of success. The German reserves in France and the Low Countries as a whole, excluding divisions holding the coast, G.A.F. divisions and training divisions, should not exceed on the day of the assault twelve full-strength first-quality divisions. In addition, the Germans should not be able to transfer more than fifteen first-quality divisions from Russia during the first two months. Moreover, on the target date the divisions in reserve should be so located that the number of first-quality divisions which the Germans could deploy in the Caen area to support the divisions holding the coast should not exceed three divisions on D Day, five divisions on D plus 2, or nine divisions by D plus 8.

During the preliminary period, therefore, every effort must be made to dissipate and divert German formations, lower their fighting efficiency and disrupt communications...

Question	Answer
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<p>What was the objective of operation "Overlord?"</p>	
<p>What factors made the Caen beaches more favorable for landing?</p>	
<p>Describe the disadvantages of a landing at Pas de Calais.</p>	
<p>The Cotentin Peninsula was deemed to have a "reasonable chance of success," yet it was abandoned in favor of Caen. What foreboding inland factors eliminated this Peninsula as a possible landing site?</p>	
<p>Prior to starting the actual invasion, there was a planned "softening" of resistance. By what means was this to be achieved?</p>	
<p>Describe the planned landing? What was the ultimate objective and how was it to occur?</p>	

<p>Why would landing at Caen be considered a surprise to the Germans?</p>	
<p>What is the most essential aspect for success of the Allied expedition? Why would this be so important?</p>	

Document 4:

Directive to Supreme Commander, Allied Expeditionary Force: http://www.army.mil/cmhp/books/wwii/7-4/7-4_b.htm

1. You are hereby designated as Supreme Allied Commander of the forces placed under your orders for operations for liberation of Europe from Germans. Your title will be Supreme Commander Allied Expeditionary Force.
2. Task. You will enter the continent of Europe and, in conjunction with the other United Nations, undertake operations aimed at the heart of Germany and the destruction of her armed forces. The date for entering the Continent is the month of May, 1944. After adequate channel ports have been secured, exploitation will be directed towards securing an area that will facilitate both ground and air operations against the enemy.
3. Notwithstanding the target date above you will be prepared at any time to take immediate advantage of favorable circumstances, such as withdrawal by the enemy on your front, to effect a reentry into the Continent with such forces as you have available at the time; a general plan for this operation when approved will be furnished for your assistance.

[...]

4. Logistics. In the United Kingdom the responsibility for logistics organization, concentration, movement and supply of forces to meet the requirements of your plan will rest with British Service Ministries so far as British Forces are concerned. So far as United States Forces are concerned, this responsibility will rest with the United States War and Navy Departments. You will be responsible for the coordination of logistical arrangements on the continent. You will also be responsible for coordinating the requirements of British and United States forces under your command.
5. Coordination of operations of other Forces and Agencies. In preparation for your assault on enemy occupied Europe, Sea and Air Forces agencies of sabotage, subversion and propaganda,

acting under a variety of authorities are now in action. You may recommend any variation in these activities which may seem to you desirable.

6. Relationship to United Nations Forces in other areas. Responsibility will rest with the Combined Chiefs of Staff for supplying information relating to operations of the Forces of the U. S. S. R. for your guidance in timing your operations. It is understood that the Soviet Forces will launch an offensive at about the same time as OVERLORD with the object of preventing the German forces from transferring from the Eastern to the Western front. The Allied Commander in Chief, Mediterranean Theater, will conduct operations designed to assist your operation, including the launching of an attack against the south of France at about the same time as OVERLORD. The scope and timing of his operations will be decided by the Combined Chiefs of Staff. You will establish contact with him and submit to the Combined Chiefs of Staff your views and recommendations regarding operations from the Mediterranean in support of your attack from the United Kingdom. The Combined Chiefs of Staff will place under your command the forces operating in Southern France as soon as you are in a position to assume such command. You will submit timely recommendations compatible with this regard.
7. Relationship with Allied Governments-the re-establishment of Civil Governments and Liberated Allied Territories and the administration of enemy territories. Further instructions will be issued to you on these subjects at a later date.

Question	Answer
What was the task of the Supreme Allied Commander?	
What role was the British force to play in this combined allied force? How were the United States and British to work together?	
How would the Soviet forces affect the outcome of Operation Overlord?	



Victory in Europe, 1944-1945

Student Name _____ Date _____

“Scavenger Hunt” for Use with Interactive Map of Northern Europe

Question	Answer
After this offensive, American forces were firmly on German soil for the first time in the war.	
This battle caused hopes of a quick defeat of Germany to vanish.	
When the French resistance movement staged an uprising on August 19, 1944, Hitler ordered the German governor of the city to do what?	
This was the name of the operation in which there was a rapid buildup of American troops in England in early 1942 in preparation for an invasion of Nazi held France.	
This was Hitler’s final reaction to the Soviet takeover of Berlin.	
Hitler’s goal in this battle was to drive a wedge between the Allied forces in the low country and those in France, and to eventually capture the port city of Antwerp.	
American forces were able to cross the Rhine River because the German army forgot to destroy the bridge in this city.	
These were the five landing beaches of D-Day.	
What were the two reasons that Eisenhower redirected his troops away from Berlin, allowing the Soviets to be the first to reach the city?	
This was the name of the invasion of Normandy.	
The closing of this pocket effectively destroyed the German Army as an effective force in the West.	

Hitler ordered General Dietrich von Choltitz to burn the city of Paris. What did he do instead?	
How did Hitler plan to defend Berlin?	
This beach suffered the most casualties during the D-Day invasion.	
To this day, this decision remains one of Eisenhower's most controversial decisions of the war.	
The capture of this port city at the end of June (1944) allowed for a reliable flow of supplies across the English Channel.	
How long after the fall of Berlin did it take for Germany to officially surrender?	
This battle came as a complete surprise to Allied forces because they did not think that German forces were still capable of such an attack. Moreover, they were not able to use air support due to winter weather conditions.	
What was the goal of the intensive bombing campaign that preceded D-Day.	
This valley is home to most of Germany's heavy industry.	
On September 17, 1944, this attack began initially as a success, but nearby German forces launched a deadly counterattack that lasted three days.	
By what month was most of Germany in Allied hands?	
Why was the invasion of Nazi-held France delayed first to 1943, and then again until 1944?	
This battle got its name from the massive "bulge" created by German forces in the middle of the Allied line.	
Why was there a celebration when American forces met up with Soviet forces?	

Why did Hitler immediately refuse to send reinforcements to the landing sites on D-Day?	
Because Hitler was fighting desperately to keep this city, other Allied forces under the command of George Patton were able to move further east and surround the Germans on three sides.	
What is significant about the date June 6, 1944?	



Victory in Europe, 1944-1945

Student Name _____ Date _____

Document Analysis—Strategic Bombing of Germany

Group 1: Overall Strategies

Excerpts from the United States Strategic Bombing Survey, Summary Report (European War), 30 September 1945: <http://www.ibiblio.org/hyperwar//AAF/USSBS/ETO-Summary.html>

[....]

In the European war, Allied air power was called upon to play many roles -- partner with the Navy over the sea lanes; partner with the Army in ground battle; partner with both on the invasion beaches; reconnaissance photographer for all; mover of troops and critical supplies; and attacker of the enemy's vital strength far behind the battle line.

In the attack by Allied air power, almost 2,700,000 tons of bombs were dropped, more than 1,440,000 bomber sorties and 2,680,000 fighter sorties were flown. The number of combat planes reached a peak of some 28,000 and at the maximum 1,300,000 men were in combat commands. The number of men lost in air action was 79,265 Americans and 79,281 British. [Note: All RAF statistics are preliminary or tentative.] More than 18,000 American and 22,000 British planes were lost or damaged beyond repair.

In the wake of these attacks there are great paths of destruction. In Germany, 3,600,000 dwelling units, approximately 20% of the total, were destroyed or heavily damaged. Survey estimates show some 300,000 civilians killed and 780,000 wounded. The number made homeless aggregates 7,500,000. The principal German cities have been largely reduced to hollow walls and piles of rubble. German industry is bruised and temporarily paralyzed. These are the scars across the face of the enemy, the preface to the victory that followed.

How air supremacy was achieved and the results which followed from its exploitation are the subject of this summary report. The use of air power cannot properly be considered, however, except in conjunction with the broad plans and strategy under which the war was conducted.

The German Strategic Plan

Interrogation of Hitler's surviving confidants and General Staff and Field Generals of the Wehrmacht [the German Army] confirms the view that prior to the winter of 1941 Hitler hoped to realize Germany's ascendancy over Europe, and possibly the world, largely by skillful strategy. Time and timing were the secret weapons in the German war plan that took shape after 1933. Hitler hoped to build Germany's strength more quickly than that of any potential opponent. By rapid mobilization of a powerful striking force, by exploiting the political and ideological strains that he conceived to exist in the rest of the world, and by overwhelming separately in lightning campaigns such of his enemies as chose to resist, he hoped to secure for Germany an invulnerable position in Europe and in the world.

What Germany lacked in numbers of divisions, in raw materials and in basic industrial strength, it planned to compensate with highly trained ground units of great striking power. These were to be

equipped and ready to march while Germany's enemies were merely preparing. Essential in this strategy was a technically well-developed air force in being. Emphasis was not placed upon the development of an air force that would destroy the sustaining resources of the enemy's economy. In the German plan it was anticipated that an enemy's entire country would be so quickly overrun that little concern need be had for industrial and war production that was merely potential. The air force was, primarily, an arm of the blitzkrieg....

The German War Economy

Study of German war production data as well as interrogation of those who were in charge of rearmament at the time, leaves no doubt that until the defeat at Moscow German industry was incompletely mobilized and that in fact Germany did not foresee the need for full economic mobilization. German arms production during 1940 and 1941 was generally below that of Britain.... After the defeat at Moscow early in 1942, armament production increased rapidly. However, such increase was more the result of improvements in industrial efficiency than of general economic mobilization. Studies of German manpower utilization show that throughout the war a great deal of German industry was on a single shift basis, relatively few German women (less than in the first war) were drawn into industry and the average work week was below British standards....

Because the German economy through most of the war was substantially undermobilized, it was resilient under air attack. Civilian consumption was high during the early years of the war and inventories both in trade channels and consumers' possession were also high. These helped cushion the people of the German cities from the effects of bombing. Plant and machinery were plentiful and incompletely used. Thus it was comparatively easy to substitute unused or partly used machinery for that which was destroyed. While there was constant pressure throughout for German manpower for the Wehrmacht, the industrial labor supply, as augmented by foreign labor, was sufficient to permit the diversion of large numbers to the repair of bomb damage or the clearance of debris with relatively small sacrifice of essential production.

The Allied Strategic Plan

In both the RAF and the United States Army Air Forces there were some who believed that air power could deliver the knockout blow against Germany, and force capitulation. This view, however, was not controlling in the overall Allied strategic plan. The dominant element in that plan was invasion of the Continent to occur in the spring of 1944. Plans called for establishing air superiority prior to the date of the invasion and the exploitation of such superiority in weakening the enemy's will and capacity to resist.

The deployment of the air forces opposing Germany was heavily influenced by the fact that victory was planned to come through invasion and land occupation. In the early years of the war, to be sure, the RAF had the independent mission of striking at German industrial centers in an effort to weaken the German economy and the morale of the German people. However, the weight of the RAF effort, compared with tonnages later employed, was very small --16,000 tons in 1940 and 46,000 tons in 1941 compared with 676,000 tons in 1944. Soon after the United States entered the air war in 1942, replacements for the new (and still small) Eighth Air Force were diverted to support the North African invasion. During 1943, target selection for the Eighth Air Force and the Fifteenth Air Force (based on the Mediterranean) reckoned always with the fact that maximum contribution must be made to the invasion in the coming year. And the Ninth Air Force in Western Europe and the Twelfth Air Force in the Mediterranean were developed with the primary mission of securing the sky in the theatre of combat and clearing the way for ground operations. In the spring and early summer of 1944, all air forces based on England were used to prepare the way for the invasion. It was not intended that the air attacks against Germany proper and the German economy would be a subordinate operation, but rather a part of a larger strategic plan -- one that

contemplated that the decision would come through the advance of ground armies rather than through air power alone.

[...]

The First Daylight Operations

The U. S. Army Air Forces entered the European war with the firm view that specific industries and services were the most promising targets in the enemy economy, and they believed that if these targets were to be hit accurately, the attacks had to be made in daylight. A word needs to be said on the problem of accuracy in attack. Before the war, the U. S. Army Air Forces had advanced bombing techniques to their highest level of development and had trained a limited number of crews to a high degree of precision in bombing under target range conditions, thus leading to the expressions "pin point" and "pickle barrel" bombing. However, it was not possible to approach such standards of accuracy under battle conditions imposed over Europe. Many limiting factors intervened; target obscuration by clouds, fog, smoke screens and industrial haze; enemy fighter opposition which necessitated defensive bombing formations, thus restricting freedom of maneuver; antiaircraft artillery defenses, demanding minimum time exposure of the attacking force in order to keep losses down; and finally, time limitations imposed on combat crew training after the war began.

It was considered that enemy opposition made formation flying and formation attack a necessary tactical and technical procedure. Bombing patterns resulted -- only a portion of which could fall on small precision targets. The rest spilled over on adjacent plants, or built-up areas, or in open fields. Accuracy ranged from poor to excellent. When visual conditions were favorable and flak defenses were not intense, bombing results were at their best. Unfortunately, the major portion of bombing operations over Germany had to be conducted under weather and battle conditions that restricted bombing technique, and accuracy suffered accordingly. Conventionally the air forces designated as "the target area" a circle having a radius of 1000 feet around the aiming point of attack. While accuracy improved during the war, Survey studies show that, in the over-all, only about 20% of the bombs aimed at precision targets fell within this target area. A peak accuracy of 70% was reached for the month of February 1945. These are important facts for the reader to keep in mind, especially when considering the tonnages of bombs delivered by the air forces. Of necessity a far larger tonnage was carried than hit German installations.

[...]

Conclusion

The foregoing pages tell of the results achieved by Allied air power, in each of its several roles in the war in Europe. It remains to look at the results as a whole and to seek such signposts as may be of guidance to the future.

Allied air power was decisive in the war in Western Europe. Hindsight inevitably suggests that it might have been employed differently or better in some respects. Nevertheless, it was decisive. In the air, its victory was complete. At sea, its contribution, combined with naval power, brought an end to the enemy's greatest naval threat -- the U-boat; on land, it helped turn the tide overwhelmingly in favor of Allied ground forces. Its power and superiority made possible the success of the invasion. It brought the economy which sustained the enemy's armed forces to virtual collapse, although the full effects of this collapse had not reached the enemy's front lines when they were overrun by Allied forces. It brought home to the German people the full impact of modern war with all its horror and suffering. Its imprint on the German nation will be lasting.

Some Signposts

1. The German experience suggests that even a first class military power -- rugged and resilient as Germany was -- cannot live long under full-scale and free exploitation of air weapons over the heart of its territory. By the beginning of 1945, before the invasion of the homeland itself, Germany was reaching a state of helplessness. Her armament production was falling irretrievably, orderliness in effort was disappearing, and total disruption and disintegration were well along. Her armies were still in the field. But with the impending collapse of the supporting economy, the indications are convincing that they would have had to cease fighting -- any effective fighting -- within a few months. Germany was mortally wounded.
2. The significance of full domination of the air over the enemy -- both over its armed forces and over its sustaining economy -- must be emphasized. That domination of the air was essential. Without it, attacks on the basic economy of the enemy could not have been delivered in sufficient force and with sufficient freedom to bring effective and lasting results.
3. As the air offensive gained in tempo, the Germans were unable to prevent the decline and eventual collapse of their economy. Nevertheless, the recuperative and defensive powers of Germany were immense; the speed and ingenuity with which they rebuilt and maintained essential war industries in operation clearly surpassed Allied expectations. Germany resorted to almost every means an ingenious people could devise to avoid the attacks upon her economy and to minimize their effects. Camouflage, smoke screens, shadow plants, dispersal, underground factories, were all employed. In some measure all were helpful, but without control of the air, none was really effective....
4. The mental reaction of the German people to air attack is significant. Under ruthless Nazi control they showed surprising resistance to the terror and hardships of repeated air attack, to the destruction of their homes and belongings, and to the conditions under which they were reduced to live. Their morale, their belief in ultimate victory or satisfactory compromise, and their confidence in their leaders declined, but they continued to work efficiently as long as the physical means of production remained. The power of a police state over its people cannot be underestimated.
5. The importance of careful selection of targets for air attack is emphasized by the German experience. The Germans were far more concerned over attacks on one or more of their basic industries and services -- their oil, chemical, or steel industries or their power or transportation networks -- than they were over attacks on their armament industry or the city areas. The most serious attacks were those which destroyed the industry or service which most indispensably served other industries. The Germans found it clearly more important to devise measures for the protection of basic industries and services than for the protection of factories turning out finished products.
6. The German experience showed that, whatever the target system, no indispensable industry was permanently put out of commission by a single attack. Persistent re-attack was necessary.
7. [...]
8. Among the most significant of the other factors which contributed to the success of the air effort was the extraordinary progress during the war of Allied research, development, and production. As a result of this progress, the air forces eventually brought to the attack superiority in both numbers and quality of crews, aircraft, and equipment. Constant and unending effort was required, however, to overcome the initial advantages of the enemy and later to keep pace with his research and technology. It was fortunate that the leaders of the German Air Force relied too

heavily on their initial advantage. For this reason they failed to develop, in time, weapons, such as their jet-propelled planes, that might have substantially improved their position. There was hazard, on the other hand, in the fact that the Allies were behind the Germans in the development of jet propelled aircraft....

9. The achievements of Allied air power were attained only with difficulty and great cost in men, material, and effort. Its success depended on the courage, fortitude, and gallant action of the officers and men of the air crews and commands. It depended also on a superiority in leadership, ability, and basic strength. These led to a timely and careful training of pilots and crews in volume; to the production of planes, weapons, and supplies in great numbers and of high quality; to the securing of adequate bases and supply routes; to speed and ingenuity in development; and to cooperation with strong and faithful Allies. The failure of any one of these might have seriously narrowed and even eliminated the margin.

Question	Answer
List the various roles that Allied air power played during the war.	
How destructive was the Allied air campaign?	
What was Hitler's overall goal prior to the winter of 1941?	
How did Hitler's air force play into his war strategy?	
Why did Allied air attacks have little effect on Germany's economy?	
By what means did the Allied forces believe that they would win the war? How did air power play into that plan?	

<p>How accurate were the bomb drops during the war? What European factors limited the effectiveness of the bombing campaign?</p>	
<p>Define "target circle." How often was the target circle hit?</p>	
<p>What are the long-term effects of bombing?</p>	
<p>By what methods did Germany attempt to resist the air attacks? How resilient were they?</p>	
<p>What was the overall conclusion of the significance of Allied air power?</p>	



Victory in Europe, 1944-1945

Student Name _____ Date _____

Document Analysis—Strategic Bombing of Germany

Group 2: Effects on German Cities

Excerpts from the United States Strategic Bombing Survey, Summary Report (European War), 30 September 1945: <http://www.ibiblio.org/hyperwar/AAF/USSBS/ETO-Summary.html>

[....]

In the European war, Allied air power was called upon to play many roles -- partner with the Navy over the sea lanes; partner with the Army in ground battle; partner with both on the invasion beaches; reconnaissance photographer for all; mover of troops and critical supplies; and attacker of the enemy's vital strength far behind the battle line.

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In the wake of these attacks there are great paths of destruction. In Germany, 3,600,000 dwelling units, approximately 20% of the total, were destroyed or heavily damaged. Survey estimates show some 300,000 civilians killed and 780,000 wounded. The number made homeless aggregates 7,500,000. The principal German cities have been largely reduced to hollow walls and piles of rubble. German industry is bruised and temporarily paralyzed. These are the scars across the face of the enemy, the preface to the victory that followed.

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[.....]

Early Air Operations -- City Area Raids

The pioneer in the air war against Germany was the RAF. The RAF experimented briefly in 1940 with daylight attacks on industrial targets in Germany but abandoned the effort when losses proved unbearably heavy. Thereafter, it attempted to find and attack such targets as oil, aluminum and aircraft plants at night. This effort too was abandoned; with available techniques it was not possible to locate the targets often enough. Then the RAF began its famous raids on German urban and industrial centers. On the night of May 30, 1942, it mounted its first "thousand plane" raid against Cologne and two nights later struck Essen with almost equal force. On three nights in late July and early August 1943 it struck Hamburg in perhaps the most devastating single city attack of the war -- about one third of the houses of

the city were destroyed and German estimates show 60,000 to 100,000 people killed. No subsequent city raid shook Germany as did that on Hamburg; documents show that German officials were thoroughly alarmed and there is some indication from interrogation of high officials that Hitler himself thought that further attacks of similar weight might force Germany out of the war. The RAF proceeded to destroy one major urban center after another. Except in the extreme eastern part of the Reich, there is no major city that does not bear the mark of these attacks. However, no subsequent attack had the shock effect of the Hamburg raid.

In the latter half of 1944, aided by new navigational techniques, the RAF returned with part of its force to an attack on industrial targets. These attacks were notably successful but it is with the attacks on urban areas that the RAF is most prominently identified.

The city attacks of the RAF prior to the autumn of 1944, did not substantially affect the course of German war production. German war production as a whole continued to increase. This in itself is not conclusive, but the Survey has made detailed analysis of the course of production and trade in 10 German cities that were attacked during this period and has made more general analyses in others. These show that while production received a moderate setback after a raid, it recovered substantially within a relatively few weeks. As a rule the industrial plants were located around the perimeter of German cities and characteristically these were relatively undamaged.

Commencing in the autumn of 1944, the tonnage dropped on city areas, plus spill-overs from attacks on transportation and other specific targets, mounted greatly. In the course of these raids, Germany's steel industry was knocked out, its electric power industry was substantially impaired and industry generally in the areas attacked was disorganized. There were so many forces making for the collapse of production during this period, however, that it is not possible separately to assess the effect of these later area raids on war production. There is no doubt, however, that they were significant.

The Survey has made extensive studies of the reaction of the German people to the air attack and especially to city raids. These studies were carefully designed to cover a complete cross section of the German people in western and southern Germany and to reflect with a minimum of bias their attitude and behavior during the raids. These studies show that the morale of the German people deteriorated under aerial attack. The night raids were feared far more than daylight raids. The people lost faith in the prospect of victory, in their leaders and in the promises and propaganda to which they were subjected. Most of all, they wanted the war to end. They resorted increasingly to "black radio" listening, to circulation of rumor and fact in opposition to the Regime; and there was some increase in active political dissidence -- in 1944 one German in every thousand was arrested for a political offense. If they had been at liberty to vote themselves out of the war, they would have done so well before the final surrender. In a determined police state, however, there is a wide difference between dissatisfaction and expressed opposition. Although examination of official records and those of individual plants shows that absenteeism increased and productivity diminished somewhat in the late stages of the war, by and large workers continued to work. However dissatisfied they were with the war, the German people lacked either the will or the means to make their dissatisfaction evident.

The city area raids have left their mark on the German people as well as on their cities. Far more than any other military action that preceded the actual occupation of Germany itself, these attacks left the German people with a solid lesson in the disadvantages of war. It was a terrible lesson; conceivably that lesson, both in Germany and abroad, could be the most lasting single effect of the air war.

The Civilians

A word should perhaps be added on the effect of the air war on the German civilian and on the civilian economy. Germany began the war after several years of full employment and after the civilian standard

of living had reached its highest level in German history. In the early years of the war -- the soft war period for Germany -- civilian consumption remained high. Germans continued to try for both guns and butter. The German people entered the period of the air war well stocked with clothing and other consumer goods. Although most consumer goods became increasingly difficult to obtain, Survey studies show that fairly adequate supplies of clothing were available for those who had been bombed out until the last stages of disorganization. Food, though strictly rationed, was in nutritionally adequate supply throughout the war. The Germans' diet had about the same calories as the British.

German civilian defense was examined by Survey representatives familiar with U. S. and British defenses. The German system had been devised as protection against relatively small and isolated attacks. The organization had to be substantially revised when the attacks grew to saturation proportions. In particular, arrangements were made by which a heavily bombed community might call on the fire-fighting and other defensive resources of surrounding communities and, as a final resort, on mobile reserves deployed by the central government through the more vulnerable areas. In the attacks on German cities incendiary bombs, ton for ton, were found to have been between four and five times as destructive as high explosive. German fire defenses lacked adequate static and other water reserves replenished by mains independent of the more vulnerable central water supply. However, in the more serious fire raids, any fire-fighting equipment was found to have been of little avail. Fire storms occurred, the widespread fires generating a violent hurricane-like draft, which fed other fires and made all attempts at control hopeless....

Official German statistics place total casualties from air attack -- including German civilians, foreigners, and members of the armed forces in cities that were being attacked -- at 250,253 killed for the period from January 1, 1943, to January 31, 1945, and 305,455 wounded badly enough to require hospitalization, during the period from October 1, 1943, to January 31, 1945. A careful examination of these data, together with checks against the records of individual cities that were attacked, indicates that they are too low. A revised estimate prepared by the Survey (which is also a minimum) places total casualties for the entire period of the war at 305,000 killed and 780,000 wounded. More reliable statistics are available on damage to housing. According to these, 485,000 residential buildings were totally destroyed by air attack and 415,000 were heavily damaged, making a total of 20 percent of all dwelling units in Germany. In some 50 cities that were primary targets of the air attack, the proportion of destroyed or heavily damaged dwelling units is about 40 percent. The result of all these attacks was to render homeless some 7,500,000 German civilians....

Conclusion

The foregoing pages tell of the results achieved by Allied air power, in each of its several roles in the war in Europe. It remains to look at the results as a whole and to seek such signposts as may be of guidance to the future.

Allied air power was decisive in the war in Western Europe. Hindsight inevitably suggests that it might have been employed differently or better in some respects. Nevertheless, it was decisive. In the air, its victory was complete. At sea, its contribution, combined with naval power, brought an end to the enemy's greatest naval threat -- the U-boat; on land, it helped turn the tide overwhelmingly in favor of Allied ground forces. Its power and superiority made possible the success of the invasion. It brought the economy which sustained the enemy's armed forces to virtual collapse, although the full effects of this collapse had not reached the enemy's front lines when they were overrun by Allied forces. It brought home to the German people the full impact of modern war with all its horror and suffering. Its imprint on the German nation will be lasting.

Some Signposts

1. The German experience suggests that even a first class military power -- rugged and resilient as Germany was -- cannot live long under full-scale and free exploitation of air weapons over the heart of its territory. By the beginning of 1945, before the invasion of the homeland itself, Germany was reaching a state of helplessness. Her armament production was falling irretrievably, orderliness in effort was disappearing, and total disruption and disintegration were well along. Her armies were still in the field. But with the impending collapse of the supporting economy, the indications are convincing that they would have had to cease fighting -- any effective fighting -- within a few months. Germany was mortally wounded.
2. The significance of full domination of the air over the enemy -- both over its armed forces and over its sustaining economy -- must be emphasized. That domination of the air was essential. Without it, attacks on the basic economy of the enemy could not have been delivered in sufficient force and with sufficient freedom to bring effective and lasting results.
3. As the air offensive gained in tempo, the Germans were unable to prevent the decline and eventual collapse of their economy. Nevertheless, the recuperative and defensive powers of Germany were immense; the speed and ingenuity with which they rebuilt and maintained essential war industries in operation clearly surpassed Allied expectations. Germany resorted to almost every means an ingenious people could devise to avoid the attacks upon her economy and to minimize their effects. Camouflage, smoke screens, shadow plants, dispersal, underground factories, were all employed. In some measure all were helpful, but without control of the air, none was really effective....
4. The mental reaction of the German people to air attack is significant. Under ruthless Nazi control they showed surprising resistance to the terror and hardships of repeated air attack, to the destruction of their homes and belongings, and to the conditions under which they were reduced to live. Their morale, their belief in ultimate victory or satisfactory compromise, and their confidence in their leaders declined, but they continued to work efficiently as long as the physical means of production remained. The power of a police state over its people cannot be underestimated.
5. The importance of careful selection of targets for air attack is emphasized by the German experience. The Germans were far more concerned over attacks on one or more of their basic industries and services -- their oil, chemical, or steel industries or their power or transportation networks -- than they were over attacks on their armament industry or the city areas. The most serious attacks were those which destroyed the industry or service which most indispensably served other industries. The Germans found it clearly more important to devise measures for the protection of basic industries and services than for the protection of factories turning out finished products.
6. The German experience showed that, whatever the target system, no indispensable industry was permanently put out of commission by a single attack Persistent re-attack was necessary.
7. [...]
8. Among the most significant of the other factors which contributed to the success of the air effort was the extraordinary progress during the war of Allied research, development, and production. As a result of this progress, the air forces eventually brought to the attack superiority in both numbers and quality of crews, aircraft, and equipment. Constant and unending effort was

required, however, to overcome the initial advantages of the enemy and later to keep pace with his research and technology. It was fortunate that the leaders of the German Air Force relied too heavily on their initial advantage. For this reason they failed to develop, in time, weapons, such as their jet-propelled planes, that might have substantially improved their position. There was hazard, on the other hand, in the fact that the Allies were behind the Germans in the development of jet propelled aircraft....

9. The achievements of Allied air power were attained only with difficulty and great cost in men, material, and effort. Its success depended on the courage, fortitude, and gallant action of the officers and men of the air crews and commands. It depended also on a superiority in leadership, ability, and basic strength. These led to a timely and careful training of pilots and crews in volume; to the production of planes, weapons, and supplies in great numbers and of high quality; to the securing of adequate bases and supply routes; to speed and ingenuity in development; and to cooperation with strong and faithful Allies. The failure of any one of these might have seriously narrowed and even eliminated the margin.

Question	Answer
List the various roles that Allied air power played during the war.	
How destructive was the Allied air campaign?	
What was the RAF? Why was the raid on Hamburg so demoralizing?	
Why didn't the bombing of German cities have a greater impact on the German economy?	
How did these attacks affect German morale?	
How did the war affect daily life for most Germans?	

<p>How damaging were the raids on human life and buildings?</p>	
<p>What are the long-term effects of bombing?</p>	
<p>By what methods did Germany attempt to resist the air attacks? How resilient were they?</p>	
<p>What was the overall conclusion of the significance of Allied air power?</p>	



Victory in Europe, 1944-1945

Student Name _____ Date _____

Document Analysis—Strategic Bombing of Germany

Group 3: Effects on the German Ball Bearing and Steel Industries

Excerpts from the United States Strategic Bombing Survey, Summary Report (European War), 30 September 1945: <http://www.ibiblio.org/hyperwar/AAF/USSBS/ETO-Summary.html>

[....]

In the European war, Allied air power was called upon to play many roles -- partner with the Navy over the sea lanes; partner with the Army in ground battle; partner with both on the invasion beaches; reconnaissance photographer for all; mover of troops and critical supplies; and attacker of the enemy's vital strength far behind the battle line.

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[....]

The Ball-Bearing Attack

The German anti-friction bearing industry was heavily concentrated. When the attack began, approximately half the output came from plants in the vicinity of Schweinfurt. An adequate supply of bearings was correctly assumed to be indispensable for German war production.

In a series of raids beginning on August 17, 1943, about 12,000 tons of bombs were dropped on this target -- about one-half of one per cent of the total tonnage delivered in the air war. In an attack on August 17 by 200 B-17's on Schweinfurt, the plants were severely damaged. Records of the industry taken by the Survey (and supplemented and checked by interrogation) show that production of bearings at this center was reduced sharply -- September production was 35% of the pre-raid level. In this attack

36 of the 200 attacking planes were lost. In the famous and much-discussed second attack on October 14, 1943, when the plants were again severely damaged, one of the decisive air battles of the war took place. The 228 bombers participating were strongly attacked by German fighters when beyond the range of their fighter escort. Losses to fighters and to flak cost the United States forces 62 planes with another 138 damaged in varying degree, some beyond repair. Repeated losses of this magnitude could not be sustained; deep penetrations without escort, of which this was among the earliest, were suspended and attacks on Schweinfurt were not renewed for four months. The Germans made good use of the breathing spell.... Energetic steps were taken to disperse the industry. Restoration was aided by the circumstance - - which Survey investigations show to have been fairly common to all such raids -- that machines and machine tools were damaged far less severely than factory structures. German equipment was redesigned to substitute other types of bearings wherever possible. And the Germans drew on the substantial stocks that were on hand. Although there were further attacks, production by the autumn of 1944 was back to pre-raid levels. From examination of the records and personalities in the ball-bearing industry, the user industries and the testimony of war production officials, there is no evidence that the attacks on the ball-bearing industry had any measurable effect on essential war production.

[....]

Steel

By mid-1944 the air war had entered a new phase. Its most important feature, apart from mastery of the air, was the greatly increased weight of the attack that could be brought to bear; in the second half of 1944, 481,400 tons of bombs were dropped on Germany as compared with 150,700 in all 1943. The RAF and the United States Army Air Forces during this period were teamed in a fully coordinated offensive and the RAF was returning to the attack of specific industrial targets. A target that was attacked with poor results in 1943 might have yielded major returns in 1944 for the simple reason that an attack in 1944 was certain to be enormously heavier. With improved bombing techniques it was also likely to be considerably more accurate. Increased weight was a major feature of the raids that reduced the German steel industry.

Germany began the war with approximately 23,000,000 metric tons per year of steel capacity, about 69 percent of which was in the Ruhr. The 1940 victories added another 17,000,000 tons principally in Lorraine, Belgium and Luxembourg. However, official records and those of the industry for the war years, supplemented by interrogation, show that the 40,000,000 tons theoretical capacity was never reached. Production in the occupied countries was always troublesome and deficient. In spite of the considerable efforts to develop low-grade ores in Germany proper and medium grade ores in Austria, Germany throughout the war continued to be primarily dependent on Swedish, Norwegian and French ores.

Unlike the United States, Germany did not have to find steel to build a large merchant fleet or for a program of heavy naval construction. Nor did she have to build a complete munitions industry in the middle of the war. For these reasons the German steel supply for finished munitions was only slightly less liberal than that of the United States. Although steel was considered a bottleneck by the Germans, a detailed examination of the control machinery together with interrogation of officials in the Speer ministry and its predecessor organizations, reveals that the trouble was partly an insufficient allocation system and partly, in the early years of the war especially, an unwillingness to cut out nonessential construction and civilian consumption. German industrialists were also found to have had a marked propensity to hoard steel.

Throughout the war there was considerable debate whether the German steel industry was a desirable target -- and especially whether steel mills were vulnerable to the type of attack that could be made. In 1943 the RAF made a modest attack on the steel industry of the Ruhr but the attack was given up

because it was believed to have been too costly for the results achieved. Production records taken by the Survey show, in fact, that it had some effect; production in the Ruhr declined by approximately 10 percent during the attack and did not fully recover during the remainder of the year. German steel producers were required by the government to keep records of production losses and their causes. These records show that air raid alerts in 1943 were a more serious cause of the lost production than the actual damage from the raids.

During the last half of 1944 both the cities and the transportation system of the Ruhr were the targets of extremely heavy attack, primarily by the RAF. Production of steel in the Ruhr was reduced by 80 percent between June and the end of the year. Loss of production of high-grade steel in the Ruhr was greater than the loss of Bessemer steel and high-grade steel became a bottleneck by the middle of 1944. German steel production for all the Reich and occupied countries declined from 2,570,000 metric tons in July to 1,000,000 metric tons in December. Of this loss about 490,000 tons was the result of loss of territory.

Examination of the steel plants showed that, although the attack damaged some blast furnaces, open hearths and rolling mills, it was primarily effective through damage to utilities (electricity, gas and water) and communications within the plants and to utilities and transport supplying the plants.

Although steel production had been reduced to critical levels by the end of 1944 and continued to fall until the end of the war, Survey studies do not indicate that the steel shortage (unlike the oil shortage or even the ammunition shortage) was decisive. It might have been decisive if the war had continued, and if this specific shortage had not been overshadowed by the disintegration of the whole economy. As it developed at the end of the war, certain German industries had inventories of steel that ranged from comfortable to generous.

[....]

Conclusion

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economy, the indications are convincing that they would have had to cease fighting -- any effective fighting -- within a few months. Germany was mortally wounded.

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Question	Answer
List the various roles that Allied air power played during the war.	
How destructive was the Allied air campaign?	
Describe the attack on Schweinfurt.	
How did the nature of the air war change between 1943 and 1944?	
Where was the majority of Germany's steel production? What was the state of their steel productivity during the war?	
How effective were the attacks on Germany's steel plants? Did this hurt Germany's war effort? Why or why not?	
What are the long-term effects of bombing?	

<p>By what methods did Germany attempt to resist the air attacks? How resilient were they?</p>	
<p>What was the overall conclusion of the significance of Allied air power?</p>	



Victory in Europe, 1944-1945

Student Name _____ Date _____

Document Analysis—Strategic Bombing of Germany

Group 4: Effects on German Industry (Oil and Railroads)

Excerpts from the United States Strategic Bombing Survey, Summary Report (European War), 30 September 1945: <http://www.ibiblio.org/hyperwar//AAF/USSBS/ETO-Summary.html>

[....]

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[....]

The Attack on Oil

With the reduction of German air power, oil became the priority target in the German economy. The bomber force for several months had been adequate for the task. A preliminary attack was launched on May 12, 1944, followed by another on May 28; the main blow was not struck, however, until after D-day. In the months before D-day and for a shorter period immediately following, all available air power based on England was devoted to insuring the success of the invasion....

The German oil supply was tight throughout the war, and was a controlling factor in military operations. The chief source of supply, and the only source for aviation gasoline, was 13 synthetic plants together with a small production from three additional ones that started operations in 1944....

Production from the synthetic plants declined steadily and by July 1944 every major plant had been hit. These plants were producing an average of 316,000 tons per month when the attacks began. Their production fell to 107,000 tons in June and 17,000 tons in September. Output of aviation gasoline from synthetic plants dropped from 175,000 tons in April to 30,000 tons in July and 5,000 tons in September. Production recovered somewhat in November and December, but for the rest of the war was but a fraction of pre-attack output.

The Germans viewed the attacks as catastrophic. In a series of letters to Hitler, among documents seized by the Survey, the developing crisis is outlined month by month in detail. On June 30, Speer wrote: "The enemy has succeeded in increasing our losses of aviation gasoline up to 90 percent by June 22d. Only through speedy recovery of damaged plants has it been possible to regain partly some of the terrible losses." The tone of the letters that followed was similar....

Consumption of oil exceeded production from May 1944 on. Accumulated stocks were rapidly used up, and in six months were practically exhausted. The loss of oil production was sharply felt by the armed forces. In August the final run-in-time for aircraft engines was cut from two hours to one-half hour. For lack of fuel, pilot training, previously cut down, was further curtailed. Through the summer, the movement of German Panzer Divisions in the field was hampered more and more seriously as a result of losses in combat and mounting transportation difficulties, together with the fall in fuel production. By December, according to Speer, the fuel shortage had reached catastrophic proportions. When the Germans launched their counter-offensive on December 16, 1944, their reserves of fuel were insufficient to support the operation. They counted on capturing Allied stocks. Failing in this, many panzer units were lost when they ran out of gasoline. In February and March of 1945 the Germans massed 1,200 tanks on the Baranov bridgehead at the Vistula to check the Russians. They were immobilized for lack of gasoline and overrun.

[...]

The Attack on the Railways....

The attack on transportation was the decisive blow that completely disorganized the German economy. It reduced war production in all categories and made it difficult to move what was produced to the front. The attack also limited the tactical mobility of the German army....

Germany entered the war with an excellent railway System; it had general overcapacity in both lines and yards (built partly in anticipation of military requirements), and, popular supposition to the contrary, the system was not undermaintained.

Standards of maintenance were higher than those general in the United States. The railway system was supplemented by a strong inland waterways system connecting the important rivers of northern Germany, crisscrossing the Ruhr and connecting it with Berlin....

Although the investigation shows that the railroad system was under strain -- especially during the winter campaign in Russia in 1941-42 when there was a serious shortage of cars and locomotives -- it was generally adequate for the demands placed upon it until the spring of 1944. New construction and appropriation of equipment of occupied counties remedied the locomotive and car shortage. The Reichsbahn had taken no important steps to prepare itself for air attack.

The attack on German transportation was intimately woven with the development of ground operations. In support of the invasion a major assignment of the air forces had been the disruption of rail traffic between Germany and the French coast through bombing of marshalling yards in northern France. At the time of the invasion itself a systematic and large-scale attempt was made to interdict all traffic to the Normandy beachhead. These latter operations were notably successful; as the front moved to the

German border the attack was extended to the railroads of the Reich proper. Heavy and medium bombers and fighters all participated.

Although prior to September 1944, there had been sporadic attacks on the German transportation system, no serious deterioration in its ability to handle traffic was identified by the Survey. The vastly heavier attacks in September and October 1944 on marshalling yards, bridges, lines, and on train movements, produced a serious disruption in traffic over all of western Germany. Freight car loadings, which were approximately 900,000 cars for the Reich as a whole in the week ending August 19 fell to 700,000 cars in the last week of October. There was some recovery in early November, but thereafter they declined erratically to 550,000 cars in the week ending December 23 and to 214,000 cars during the week ending March 3. Thereafter the disorganization was so great that no useful statistics were kept....

The effect of this progressive traffic tie-up was found, as might be expected, to have first affected commodities normally shipped in less-than-trainload lots -- finished and semi-finished manufactured goods, components, perishable consumer goods and the less bulky raw materials. Cars loaded with these commodities had to be handled through the marshalling yards and after the September and October attacks this became increasingly difficult or impossible. Although output of many industries reached a peak in late summer and declined thereafter, total output of the economy was on the whole well-maintained through November. Beginning in December there was a sharp fall in production in nearly all industries; week by week the decline continued until the end of the war.

Although coal traffic (about 40 percent of all the traffic carried by the German railways) held up better than miscellaneous commercial traffic, the decline was both more easily traceable and more dramatic. The September raids reduced coal-car placements in the Essen Division of the Reichsbahn (the originator of most of the coal traffic of the Ruhr) to an average of 12,000 cars daily as compared with 21,400 at the beginning of the year. Most of this was for consumption within the Ruhr. By January, placements in the Ruhr were down to 9,000 cars a day and in February virtually complete interdiction of the Ruhr District was achieved. Such coal as was loaded was subject to confiscation by the railroads to fuel their locomotives; even with this supply, coal stocks of the Reichsbahn itself were reduced from 18 days' supply in October 1944 to 4 days' supply in February 1945. By March some divisions in southern Germany had less than a day's supply on hand, and locomotives were idle because of lack of coal.

The German economy was powered by coal; except in limited areas, the coal supply had been eliminated.

Military (Wehrmacht) traffic had top priority over all other traffic. During the period of attack this traffic came to account for an ever-increasing proportion of the declining movement. Through 1944 the air attack did not prevent the army from originating such movements although the time of arrival or even the arrival of units and equipment became increasingly uncertain. Couriers accompanied detachments and even shipments of tanks and other weapons; their task was to get off the train when it was delayed and report where it could be found. After the turn of the year even military movements became increasingly difficult. The Ardennes counter-offensive, the troops and equipment for which were marshalled over the railroads, was probably the last such effort of which the Reichsbahn would have been capable in the west.

[....]

Conclusion

The foregoing pages tell of the results achieved by Allied air power, in each of its several roles in the war in Europe. It remains to look at the results as a whole and to seek such signposts as may be of guidance to the future.

Allied air power was decisive in the war in Western Europe. Hindsight inevitably suggests that it might have been employed differently or better in some respects. Nevertheless, it was decisive. In the air, its victory was complete. At sea, its contribution, combined with naval power, brought an end to the enemy's greatest naval threat -- the U-boat; on land, it helped turn the tide overwhelmingly in favor of Allied ground forces. Its power and superiority made possible the success of the invasion. It brought the economy which sustained the enemy's armed forces to virtual collapse, although the full effects of this collapse had not reached the enemy's front lines when they were overrun by Allied forces. It brought home to the German people the full impact of modern war with all its horror and suffering. Its imprint on the German nation will be lasting.

Some Signposts

1. The German experience suggests that even a first class military power -- rugged and resilient as Germany was -- cannot live long under full-scale and free exploitation of air weapons over the heart of its territory. By the beginning of 1945, before the invasion of the homeland itself, Germany was reaching a state of helplessness. Her armament production was falling irretrievably, orderliness in effort was disappearing, and total disruption and disintegration were well along. Her armies were still in the field. But with the impending collapse of the supporting economy, the indications are convincing that they would have had to cease fighting -- any effective fighting -- within a few months. Germany was mortally wounded.
2. The significance of full domination of the air over the enemy -- both over its armed forces and over its sustaining economy -- must be emphasized. That domination of the air was essential. Without it, attacks on the basic economy of the enemy could not have been delivered in sufficient force and with sufficient freedom to bring effective and lasting results.
3. As the air offensive gained in tempo, the Germans were unable to prevent the decline and eventual collapse of their economy. Nevertheless, the recuperative and defensive powers of Germany were immense; the speed and ingenuity with which they rebuilt and maintained essential war industries in operation clearly surpassed Allied expectations. Germany resorted to almost every means an ingenious people could devise to avoid the attacks upon her economy and to minimize their effects. Camouflage, smoke screens, shadow plants, dispersal, underground factories, were all employed. In some measure all were helpful, but without control of the air, none was really effective....
4. The mental reaction of the German people to air attack is significant. Under ruthless Nazi control they showed surprising resistance to the terror and hardships of repeated air attack, to the destruction of their homes and belongings, and to the conditions under which they were reduced to live. Their morale, their belief in ultimate victory or satisfactory compromise, and their confidence in their leaders declined, but they continued to work efficiently as long as the physical means of production remained. The power of a police state over its people cannot be underestimated.
5. The importance of careful selection of targets for air attack is emphasized by the German experience. The Germans were far more concerned over attacks on one or more of their basic industries and services -- their oil, chemical, or steel industries or their power or transportation networks -- than they were over attacks on their armament industry or the city areas. The most serious attacks were those which destroyed the industry or service which most indispensably served other industries. The Germans found it clearly more important to devise measures for the

protection of basic industries and services than for the protection of factories turning out finished products.

6. The German experience showed that, whatever the target system, no indispensable industry was permanently put out of commission by a single attack Persistent re-attack was necessary.
7. [...]
8. Among the most significant of the other factors which contributed to the success of the air effort was the extraordinary progress during the war of Allied research, development, and production. As a result of this progress, the air forces eventually brought to the attack superiority in both numbers and quality of crews, aircraft, and equipment. Constant and unending effort was required, however, to overcome the initial advantages of the enemy and later to keep pace with his research and technology. It was fortunate that the leaders of the German Air Force relied too heavily on their initial advantage. For this reason they failed to develop, in time, weapons, such as their jet-propelled planes, that might have substantially improved their position. There was hazard, on the other hand, in the fact that the Allies were behind the Germans in the development of jet propelled aircraft....
9. The achievements of Allied air power were attained only with difficulty and great cost in men, material, and effort. Its success depended on the courage, fortitude, and gallant action of the officers and men of the air crews and commands. It depended also on a superiority in leadership, ability, and basic strength. These led to a timely and careful training of pilots and crews in volume; to the production of planes, weapons, and supplies in great numbers and of high quality; to the securing of adequate bases and supply routes; to speed and ingenuity in development; and to cooperation with strong and faithful Allies. The failure of any one of these might have seriously narrowed and even eliminated the margin.

Question	Answer
List the various roles that Allied air power played during the war.	
How destructive was the Allied air campaign?	
Why were no major operations taken against German oil targets until after June 1944?	

<p>How did the bombing affect overall German oil output?</p>	
<p>Why would attacking the railroads hurt the German war effort?</p>	
<p>How effective were the raids against the railroads?</p>	
<p>Why would the RAF attack coal trains as well as military ones?</p>	
<p>What are the long-term effects of bombing?</p>	
<p>By what methods did Germany attempt to resist the air attacks? How resilient were they?</p>	
<p>What was the overall conclusion of the significance of Allied air power?</p>	



Victory in Europe, 1944-1945

Student Name _____ Date _____

Document Analysis—Strategic Bombing of Germany

Group 5: Effects on the German Air Force

Excerpts from the United States Strategic Bombing Survey, Summary Report (European War), 30 September 1945: <http://www.ibiblio.org/hyperwar//AAF/USSBS/ETO-Summary.html>

[....]

In the European war, Allied air power was called upon to play many roles -- partner with the Navy over the sea lanes; partner with the Army in ground battle; partner with both on the invasion beaches; reconnaissance photographer for all; mover of troops and critical supplies; and attacker of the enemy's vital strength far behind the battle line.

In the attack by Allied air power, almost 2,700,000 tons of bombs were dropped, more than 1,440,000 bomber sorties and 2,680,000 fighter sorties were flown. The number of combat planes reached a peak of some 28,000 and at the maximum 1,300,000 men were in combat commands. The number of men lost in air action was 79,265 Americans and 79,281 British. [Note: All RAF statistics are preliminary or tentative.] More than 18,000 American and 22,000 British planes were lost or damaged beyond repair.

In the wake of these attacks there are great paths of destruction. In Germany, 3,600,000 dwelling units, approximately 20% of the total, were destroyed or heavily damaged. Survey estimates show some 300,000 civilians killed and 780,000 wounded. The number made homeless aggregates 7,500,000. The principal German cities have been largely reduced to hollow walls and piles of rubble. German industry is bruised and temporarily paralyzed. These are the scars across the face of the enemy, the preface to the victory that followed.

How air supremacy was achieved and the results which followed from its exploitation are the subject of this summary report. The use of air power cannot properly be considered, however, except in conjunction with the broad plans and strategy under which the war was conducted.

[....]

The Attack on German Aircraft Plants

The heavy losses over Schweinfurt caused an important revision in the tactics of daylight bombing. Until then it had been believed that unescorted bombers, heavily gunned and flying in well designed formations, could penetrate this deeply over the Reich. At least, so far as a small force was concerned, this was proven wrong. For the remainder of 1943 after the Schweinfurt raids, daylight penetrations beyond fighter escort were sharply circumscribed. Meanwhile the U. S. heavy bomber force increased substantially in strength. In December of 1943, the P-51 (Mustang) long-range fighter first became available and in the early months of 1944 the numbers increased. With this plane, in some respects the most important addition to Allied air power during the European war, augmenting the P-47

(Thunderbolt) escorts which in the meantime had materially increased their range, daylight operations in depth were again launched.

The attack on the German aircraft industry -- primarily on airframe plants -- was opened in the summer of 1943. The German aircraft industry had been well distributed over the Reich with a view to the possibility of air attack. Isolated raids early in 1941 and 1942 had caused some further shift in production to eastern territory but only limited steps had been taken to disperse individual plant units in order to reduce their vulnerability....

In the 1943 attacks, 5,092 tons were dropped on 14 plants, primarily on airframe plants. The records show that acceptances of the Me-109, Germany's standard single-engine fighter, dropped from 725 in July to 536 in September and to a low of 357 in December.... As a result of the attacks the Germans began a more vigorous program of subdividing and dispersing aircraft plants and this caused part of the reduction in production.... The Germans as a result of these attacks decided to place increased emphasis on the production of fighter planes.

The culminating attacks on the German aircraft industry began in the last week of February 1944. With the protection of long-range fighter escort, 3,636 tons of bombs were dropped on German aircraft plants (again, airframe rather than engine plants) during that week. In that and succeeding weeks every known aircraft plant in Germany was hit.

....Production was not knocked out for long. On the contrary, during the whole year of 1944 the German air force is reported to have accepted a total of 39,807 aircraft of all types -- compared with 8,295 in 1939, or 15,596 in 1942 before the plants suffered any attack. Although it is difficult to determine exact production for any single month, acceptances were higher in March, the month after the heaviest attack, than they were in January, the month before. They continued to rise.

....Studies of individual plants by the Survey show that although buildings were destroyed the machine tools showed remarkable durability.... Nevertheless the attack on the aircraft plants, like the attack on the ball-bearing plants, showed that to knock out a single industry with the weapons available in 1943 and early 1944 was a formidable enterprise demanding continuous attacks to effect complete results. Recovery was improvised almost as quickly as the plants were knocked out. With the shift in priority for strategic attacks -- first to marshalling yards and bridges in France in preparation for invasion, immediately followed by the air campaign against oil -- the continued attacks on the aircraft industry were suspended.

The Defeat of the German Air Force

The seeming paradox of the attack on the aircraft plants is that, although production recovered quickly, the German air force after the attacks was not again a serious threat to Allied air superiority. The attacks in the winter of 1944 were escorted by P-51's and P-47's and with the appearance of these planes in force a sharp change had been ordered in escort tactics. Previously the escort planes had to protect the bomber force as their primary responsibility. They were now instructed to invite opposition from German fighter forces and to engage them at every opportunity. As a result, German fighter losses mounted sharply. The claimed losses in January were 1,115 German fighters, in February 1,118 and in March 1,217. The losses in planes were accompanied by losses in experienced pilots and disorganization and loss of the combat strength of squadrons and groups. By the spring of 1944 opposition of the Luftwaffe had ceased to be effective.

German air generals responsible for operations in France stated under interrogation that on D-day the Luftwaffe had only 80 operational planes with which to oppose the invasion. At no time between D-day and the breakthrough at St. Lo did reinforcements offset losses and increase the size of this force....

After September, German aircraft production declined gradually until December, when 3,155 planes were accepted, and in January 1945, because of the shortage of gasoline, production of all except jet types was virtually discontinued. The jet planes, especially the ME-262, were the most modern planes which any belligerent had in general operation at the end of the war. According to manufacturers and other competent observers, their production was delayed because of the failure of the Luftwaffe to recognize in time the advantages of the type. It was also delayed because Hitler intervened in 1944 with an ill-timed order to convert the ME-262 to a fighter-bomber. Virtually every manufacturer, production official, and air force general interrogated by the Survey, including Goering himself, claimed to have been appalled by this order. By May 1945, 1,400 jets had been produced. Had these planes been available six months earlier with good quality pilots, though they might not have altered the course of the war, they would have sharply increased the losses of the attacking forces.

[...]

Conclusion

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Question	Answer
List the various roles that Allied air power played during the war.	
How destructive was the Allied air campaign?	
Why was the German aircraft industry spread out over the Reich?	
How did Germany respond to early attacks against its aircraft industry? Did the attacks halt the industry?	
Describe how the use of P-51's and P-47's altered the way bombing raids were undertaken. How did this hurt Germany?	
Why did Germany halt the production of jet planes? What effect did this have on the war?	
What are the long-term effects of bombing?	
By what methods did Germany attempt to resist the air attacks? How resilient were they?	
What was the overall conclusion of the significance of Allied air power?	

