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Declassified E.O. 12356 Section 3.3/NND No. 785015

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LESSONS
OCT. - D

60 pp.

Declassified E.O. 12356 Section 3.3/NND No.

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LESSONS & REPORTS ON PREVIOUS OPERATIONS
OCT. - DEC. 1942; FEB. - JUNE 1943

60 pp.

Declassified E.O. 12356 Section 3.3/NND No.

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FILMED AS FOUND
IN COLLECTION

- 1 A 141F/2001/3/G(Tq) 30 Mar 43 Lessons learned from Amphibious Operations in N.A.
- 2 A 141F/2001/4/G(Tq) 17 Apr. From G(Tq) 1st Army reports on Operation "Tide."
- 3 A. 141F/2001/4/G(Tq) 6 May 43 From: G(Tq)
- 4 ~~141F/2001/4/G(Tq) 6 May 43 From: G(Tq)~~ DUPLICATE OF 5
- 5 DO. 26 June From: Chief Mil Joint Sec.
- 6 141F/2001/4/G(Tq) 30 June. " G(Tq) 141 Force
- 7 Report 29 June. From: 1st Army

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Declassified E.O. 12356 Section 3.3/NND No. 785015

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FIRST REPORT BY Lt. Col. J.A. OLETHORPE
SENIOR CIVIL AFFAIRS OFFICER AT LAMPEDUSA.

I arrived at LAMPEDUSA on 19th June 1943 and assumed my duties as Senior Civil Affairs Officer and Chief of A.M.C.O.T. LAMPEDUSA at 10.00 hours, the Military Governor being Sirs Commander J.D. BISHOP D.F.C. R.A.F. I was accompanied by 2/Lt J.S. POLITT of the Army of the United States.

PRE - ALLIED OCCUPATION CONDITIONS :-

1. GEOGRAPHY The island of LAMPEDUSA is approximately 7 miles long and 2 miles wide. It is largely rock, but parts have been cultivated. A small town, which is also known as LAMPEDUSA has been built around the harbour (or port) area. In the remainder of the island there are scattered dwellings, and on a hill about one mile from the town area were a number of buildings occupied by the Headquarters of the Military Forces. There was no Military occupation prior to the war. *Altitude varies from sea level to 450 ft.*
2. POLITICS The island is a Comune, part of the Province of Sicily. It contained approximately 4,500 military personnel and 2,500 civilians. The vast majority of the civilians are Fascists. The island was formerly used for exiled Anti-Fascists. At the outbreak of war most of them were removed, but a few remained, living as ordinary inhabitants. Some of them complain of victimisation, particularly by the Military Authorities, but, on the whole, they had little ground for complaint. There was no Military occupation prior to the war.
3. DAMAGE BY ALLIED BOMBING Very extensive damage has been caused, and few buildings escaped unscathed. The civilians evacuated the town area and used caves and shelters as living quarters. Only two civilians were killed.
4. CIVIL OFFICIALS :-

<u>PODERA</u>	-	SILVIA AMERA	appointed about two years ago. Native of LAMPEDUSA. No salary; Fishing vessel owner.
<u>Secretary of Comm.</u>		GROPPINO ANTONIO	Appointed by the State with a salary of 1,300 Lire per month.
<u>Clerks</u>			3 paid 600 Lire per month 2 paid 400 Lire per month

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the Military Governor being Wing Commander J.D. DISNEY D.F.C.
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3. DAMAGE BY ALLIED BOMBING Very extensive damage has been caused, and few buildings escaped unscathed. The civilians evacuated the town area and used caves and shelters as living quarters. Only two civilians were killed.
4. CIVIL OFFICIALS :-
PODESTA - SILVIA ANDREA appointed about two years ago. Native of LAMPEDUSA. No salary; Fishing vessel owner.
Secretary of Commune COPPOLINO ANTONINO. Appointed by the State with a salary of 1,300 Lire per month.
Clerks 3 paid 600 Lire per month
 2 paid 400 Lire per month
5. POLICE The Force consisted entirely of Carabinieri - one Marshall and 21 subordinates. There were no locally raised Police. *413*
6. COURTS There were no Courts or Tribunals. A Justice of the peace acted as conciliator in minor civil disputes. All criminal and civil were tried in Italy. *7/1/50*

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8: SCHOOL A school for all children between 5 and 15 years of age was closed in December 1942. All educational books and equipment (paper, pens, ink, pencils etc.) were destroyed in the bombardment. The school was superintended by the Podesta and the teaching staff consisted of six female teachers, all trained at universities in Italy, and one Priest. Salaries varied, according to seniority, from 700 to 900 Lire per month. There were about 400 pupils.

9: HOSPITAL The Hospital (Joint Civil and Military) was not damaged by the bombardment. It was well supplied with drugs and equipment to deal with any emergency. It included an Operating Theatre. Apart from the Medical Officers - all Military personnel - at the Hospital, there was one Civilian Practitioner in the town area. His house and instruments were destroyed by the bombardment. His qualifications are not very good and he is not held in high esteem by the civilian population.

10: SANITATION Modern Sanitation appears to have been nonexistent. Flies and fleas abounded owing to the failure of the Authorities to ensure that proper latrines were constructed for the use of the population who had abandoned their homes.

11: WATER SUPPLY The supply which is obtained from four artesian wells and from about 300 wells of brackish rain water, was ample. Water from the artesian wells was pumped by pipes to various parts of the island. Many of the pipes were damaged by the bombardment.

12: FUEL SUPPLY The island did not produce any fuel. Petrol, Paraffin, Oil, Charcoal and firewood were imported from Italy. The Military Authorities had installed a generating plant for electricity, which supplied many of the buildings and some private houses with light.

13: FOOD RATIONING Rations were imported and sold to provision dealers, who then sold them to civilians on production of a Ration Card.

A normal Ration for each person consisted of:-

BREAD - 150 Grams per day; expectant Mothers and workers 250 Grams per day. Purchase price 3.20 Lire per k.g.

PASTA 2 1/2 kilograms per month; expectant Mothers and workers 3 1/2 kilograms per month.

OLIVE OIL 400 grams per month. Purchase price 17 Lire per tenth litre.

SUGAR 500 grams per month; expectant Mothers, children and sick people one kilogram per month. Purchase price 9.20 Lire per k.g.

WASHING 150 grams per month

517

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WASHING 150 Grams per month
Soap Purchase price 4.50 Lire per k.g.

MILK PARAFFIN OIL FRUIT } Not rationed. Limited supplies
MEAT TOILET SOAP } received from Italy.
FISH - Not rationed. Local catch sold daily.

47 1/2

13: BAKERY. A municipal bakery, which is still intact, baked bread etc., for the military and civil population.

14: FOOD SUPPLY

- (a) Provisions. There were considerable supplies in Military Stores of flour, canned meat pasta etc., and small supplies of tinned milk olives (in barrels) and wine (in barrels). There had been some looting of these supplies by civilians.
- (b) Livestock. There were approximately 15 Cows, 1,000 sheep and 250 Goats in private ownership on the agricultural holdings.
- (c) Fish. There was a fleet of six large fishing vessels (each with a small accompanying boat) for night fishing, employing about 36 men, and about 20 small fishing boats for day fishing, employing about 100 men. A good night catch was about 5 tons. The vessels are privately owned, and after selling fish to the population, the surplus was either salted for use in bad times or exported to Italy.
- 15: (d) Agricultural Produce. In the cultivated parts there are grown small quantities of wheat, barley, oats, grapes and tomatoes. There is no record of the area of land under cultivation.

16: REAL PROPERTY Some properties were owned by the State, some by the Commune and the majority of the land and buildings by private individuals. There is no recorder register of property owners.

16: CHURCH There was a small R.C. Church forming part of the Hospital and this is intact. Another Church in the town area was destroyed. There were two Priests for the island and one Chaplain at the Hospital. A third small Church about one mile from the town was slightly damaged.

17: FINANCE. Collection of taxes ceased when the war began, all the eligible men being taken into the armed forces. Payments were made by the State as follows:-

SOLDIERS - 11 Lire with 1 Lire for wife and 3 Lire for each child per day. Aged Mothers of Soldiers were paid 8 Lire and aged Fathers 3 Lire per day.

UNEMPLOYED Out of a grant of 20,000 Lire per month by the Prefect of the Province of Sicily a dole was paid, varying according to the period of unemployment.

18: BANKS. The Branch of the Banca Nazionale del Lavoro was closed at the outbreak of war.

(b) Livestock. There were approximately 15 cows, 1,000 sheep and 250 goats in private ownership on the agricultural holdings.

(c) Fish. There was a fleet of six large fishing vessels (each with a small accompanying boat) for night fishing, employing about 36 men, and about 20 small fishing boats for day fishing, employing about 100 men. A good night catch was about 5 tons. The vessels are privately owned, and after selling fish to the population, the surplus was either salted for use in bad times or exported to Italy.

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SOLDIERS - 11 lire with 5 lire for wife and 3 lire for each child per day. Aged Mothers of Soldiers were paid 8 lire and aged Fathers 3 lire per day.

UNEMPLOYED Out of a grant of 80,000 lire per month by the Prefect of the Province of Sicily a dole was paid, varying according to the period of unemployment.

18; BANKS. The Branch of the Banca Nazionale del Lavoro was closed at the outbreak of war.

19; HARBOURS.

(a) On the Southern Coast there is a natural harbour for ships with not more than 8 feet draught. A small Molo, capable of berthing small ships, such as L.C.I.s *Marzetta*, was damaged. A preliminary survey of the Harbour itself shows that it is not suitable for ships other than

19. HARBOURS (Continued)

the L.C.T.'s and L.C.I.'s when fully loaded. It is unsuitable for unloading any form of Coaster. A Floating Crane is out of action with defective boiler tubes. The only means of disembarking cargo is by landing craft. There is a boom across the entrance.

(b). At Gals Pisana on the Eastern Coast there is a small bay, forming a natural harbour. It has a very good concrete jetty, probably built for use of S Boats or similar craft. The harbour is well concealed by cliffs on both N. and S. sides.

20. INDUSTRIES.

(a). The following industries, additional to the fishing industry mentioned in para. 14 (c), were dependent upon the size of the catches:-

FISH CANNING Over 700 tons of fish per annum were canned and exported. About 300 men and women were employed in the summer. In winter, when fishing conditions were sometimes bad, the number of employees varied.

FISH OIL EXTRACTION. There was a Fish Oil Extraction Plant, which was completely destroyed in the bombardment. About 15 men were continually employed in the industry. The fish carcasses were used for manuring the agricultural land. The oil was exported to Italy for use in the leather industry.

(b). SPONGE FISHING.

About 30 vessels were in use, but fishing ceased at the outbreak of war. All the vessels have been badly damaged and have suffered from lack of use. About 150 men, including the fishermen, were employed continually.

(c) LIME BURNING.

There was a small industry giving constant employment to 6 to 8 men.

21. BLACK MARKET. There was a thriving Black Market. Italian Soldiers who had a better food ration than civilians, were concerned in the trade.

POST ALLIED OCCUPATION CONDITIONS:-

- 2A. Allied occupation began on 12th. June, 1943 by 2 Coldstream Guards, Lt. P. Crowder of that Battalion attended to Civil Affairs and the arrangements made by him were excellent and worthy of high commendation, particularly as neither he nor any Officer of his Battalion had any previous Civil Affairs experience and had no Directive on the Policy to be adopted. Enemy Military rations were discovered in many places and their collection into a central store was put in hand. Prisoners of war and necessitous civilians were fed from the rations. An order was issued for all hoarded rations to be given up. Wing Commander J.D. BISHOP D.F.C., R.A.F. the Military Governor arrived on 16 June, 1943. On my arrival on 19th. June 1943 I took over the direction of Civil Affairs from Lt; Crowder and issued Proclamation No. 1, supplied by A.F.H.Q.
- 2A. POLITICS. There has been no Fascist propaganda and, in fact, co-operation by the civilians has been excellent. The freedom of the Hospital buildings from bombardment has caused favourable comment.
- 3A. WAR DAMAGE. A number of Prisoners of War, who are Lampedusians and who were enrolled in the Italian Military Forces during the war, have been retained on the island. About 150 of them are engaged in repairing houses damaged in the bombardment. Already 60 houses have been made fit for occupation, and priority is being given to this work. As houses are repaired civilians living in caves etc are brought back.
- 4A. CIVIL OFFICIALS. All have remained at their posts and are working cheerfully and well.
- 5A. COURTS. No cases have arisen. If necessary a Tribunal will be appointed.
- 6A. POLICE. The Police, under Marisciallo Pace Domenico while slow to get moving at first are now working well. A building is being prepared for use as a prison.
- 7A. SCHOOL. The School reopened on 21st June 1943 with only 3 pupils present, but by 25th. June over 200 attended. As the inhabitants return to the Town area, the attendance will increase and improve. In the absence of books of instruction and equipment, clean writing paper has been ~~has been~~ collected from the streets and damaged buildings, and is in use, but only a few pencils are available. All the former teaching staff is back at duty.

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8A. HOSPITAL. The Hospital is in full working order under F/Lt. W.O. HAYES the Medical Officer of the R.A.F. Wing H.Q.. He is assisted by 11 Italian Medical Officers, who have not been evacuated, and by a number of Italian Medical Orderlies, who are well trained. The Hospital has been reorganised to provide 60 beds for the Allied Garrison and 20 beds for civilians. An Appendix removal operation was performed on 20th June.

8A. HOSPITAL (cont). An Italian Medical Officer, Dr. MAOLI, has been appointed Medical Officer to the Italian population. He is enthusiastic in his work and has established a well equipped clinic in the Town area. It is in full use and is meeting a much felt want.

9A. SANITATION. The Civilian Practitioner (see para. 9), has been appointed Sanitary Officer and is in charge of a Sanitary Squad, which is cleaning up dirty areas and erecting latrines and Bailleul incinerators.

10A. WATER SUPPLY. This functions satisfactorily and the water pumping is undertaken by Italian Prisoner of War personnel previously so employed.

11A. FUEL SUPPLY.

(a). There were no stocks of firewood or matches. Firewood is now being obtained from the scrap timber of damaged buildings.

(b). The following quantities of oil have been collected:-

Lamp Burning Oil	-	15 barrels of 130 kgs	=	3,200 Litres
Crude Oil	-	10 barrels of 100 kgs	=	2,000 Litres
Naptha (Diesel)	-	12 barrels of 130 kgs	=	2,400 Litres
Lubricating Oil	-	10 barrels of 180 kgs	=	2,000 Litres.

(c) The generating plant for electricity is working and a supply of current will be provided for the hospital, which is now without it. The plant is worked by competent P of W personnel previously employed thereon.

12A. FOOD RATIONING. It is proposed to issue free food to the civilian population commencing on 1st July, 1943. Quantities will be similar to those in force prior to the occupation (see also para. 14A.) If the industries are re-established it should be possible for the existing and future supplies to be sold to provision dealers for retail at fixed prices.

13A. BAKERY. This is in full operation.

14A. FOOD SUPPLY.

(a) Provisions. A check has been made and on 25th June the quantities shown in the sub-joined table were in hand. The table also shows the estimated number of days supply. It will be seen that there is a deficiency of certain articles.

PROVISION	Quantity (kgs)	Sufficient for
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PROVISION	Quantity (kgs)	Sufficient for
Pasta	4840	15 days.
Flour	99,720	125 days
Rice	2,400	7 days 410
Beans and peas	7,700	120 days
Tinned Tunny Fish	2,600	80 days

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14A. FOOD SUPPLY (a) Provisions (Cont).

PROVISION	QUANTITY (Egs)	SUFFICIENT FOR
Olive Oil.	700	9 days.
Biscuits	1,100	2 days
Artificial Coffee	1,400	55 days
Coffee	365	11 days
Roots (Carrots etc.)	1,300	20 days
Meat in Boxes	117,550 tins	73 days
Concentrated Tomato Juice	1,100	34 days
Cheese	350	10 days
Lard	130	14 days
Dried vegetables	1,200	75 days.

The estimated wholesale value of the above is £1,320,800.

(b) Livestock There is no change in the position. A small quantity of Cow's milk is available daily and is at present the disposal of the Medical Authorities. Goats do not yield milk between May and October. Their milk is not consumed as such, but is used for cheese and butter.

(c) Fishing Big catches are being obtained. Now three vessels go out each night. The catch is at present distributed free among the civilians and the Allied forces. Any surplus will be salted. Until proper economic conditions are established, the fishing vessel owners and fishermen wish to pool all catches for the free benefit of the community.

(d) Agricultural Produce Except for very small quantities, which are now in poor condition, the harvesting of wheat, barley and oats was completed in the early days of June. Grapes will be gathered towards the end of July. The tomato season covers May and June and all produce has been collected and used.

15A. REAL PROPERTY.

A record is being kept of all privately owned property in the occupation of the Allied Forces.

16A. CHURCH

Services were resumed on 20th June. They are held in the open air.

17A. FINANCE

A separate report will be prepared.

Olive Oil.	700	9 days.
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Coffee	365	11 days
Roots (Carrots etc.)	1,300	20 days
Meat in Boxes	117,550 tins	73 days
Concentrated Tomato Juice	1,100	34 days
Cheese	550	10 days
Lard	130	1 1/2 days
Dried vegetables	1,200	75 days.

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17A. FINANCE

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18A. BANKS

All the Books of the Banca Nazionale del Lavoro were removed to Italy and there is no record here of the accounts of customers. The Bank building is being used as the Municipal and Civil Affairs Office.

19A. HARBOURS.

I am advised by Lt; Comdr. J.H.DALE (N.O.I.C.) that endeavours are being made to deepen the Harbours at CALA PISANA by blasting. It is at present possible to berth 2 L.C.T.'s bows on to the jetty or 4 alongside each other on the end of the jetty in 7 feet of water. Lt. Comdr. Dale considers that, subject to a proper survey, the 2 Harbours could be used as an advanced store and minor repairs base. There are no dry dock facilities. The floating crane was towed to Soussou on 25th June 1943 under orders from S.O.I.S. There is a very good anchorage inside the boom in 5 fathoms of water for ships up to 300 feet in length. The island provides many sheltered anchorages, although the bottom is in most places rocky and, therefore, not very good holding ground.

20A. INDUSTRIES.

Fish Canning Supplies of cans are available, but there is no Olive

Oil. Supplies were formerly obtained from Tunisia.

Sponge Fishing The vessels could be repaired locally in about three months and the industry re-started.

21A. BLACK MARKET.

Black Market dealings ^{is being} ~~have been~~ prohibited in a Proclamation.

J.H. Dale
LT-Com

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2-26-43
7800
FORCE 141

1 day old
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SECRET
11/15/2001 14:02 (T-2)

ON 2877
TAKEN BY
Cm MAXWELL.

for Major General
Chief of General Staff
141 pages

141 pages

141 pages

only MAY BE
accredited unofficial resellers Order
Sec/Army by TAG/

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The signal intelligence with reliable "definitely top" was satisfactory. The 1st Battalion as mentioned in my letter dated 13 Jan 43 was too broad in scope and was not a reliable source. The extremely rough going these battalions were called upon to cover caused this to be left behind. All unit orders are contained in my letter dated 14 Jan 43. I recommend that battalions with detachable legs for situation savings be provided.

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The Navy would prefer to build the ship as strongly recommended by the American Army and also the German Government.

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to 1877.

Discontinued

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Declassified E.O. 12356 Section 3.3/NND No. 785015

1. Introduction

Enclosed for the information of the recipient is a copy of the report of the C-130J Hercules and a B-1B bomber which were on the same flight. The report is in the form of a letter and is dated 1978.

2. Description of the Incident

The incident occurred on 1978 at the time of a flight of the C-130J Hercules and a B-1B bomber. The flight was conducted in the area of the Mediterranean Sea. The flight was conducted in the area of the Mediterranean Sea. The flight was conducted in the area of the Mediterranean Sea.

3. Conclusion

The report provided for the information of the recipient. The report is in the form of a letter and is dated 1978. The report is in the form of a letter and is dated 1978.

43351

7880/5

Jul 2 p.m.

7/28/6

ALLIED FORCE HEADQUARTERS
Military Government Section

Date _____
7880
FORCE 141

26 June 1943.

[Signature]

MEMORANDUM TO: Major General Hennel
Brig. General McSherry
Brigadier Sugden
G-2, AFHQ
G-3, AFHQ

I am sending herewith, as a possible interest, excerpts from a personal letter I have just received from Colonel B. J. Gaylord, who is on Pantelleria.

[Signature]
J. C. HOLMES
Colonel, GSC
Chief, Mil. Govt. Sec.

15381

EXCERPTS FROM LETTER RECEIVED FROM COLONEL B. J. GAYLORD FROM
PANTELLERIA

Herewith my report on the take over of the island.

Nelson went in with the D convoy, and General Strickland and I flew in on D - 1. We went in in an AT6 with 12 - P4Os for escort and missed the FW190s by ten minutes.

You have never seen anything like the underground hangers and underground installations, impervious to modern bombardment. All wired by the 40 Germans for demolition. The order, however, was not given by the Italian Admiral in command, who should be given some consideration for this. A 2000lb. bomb in the diesel room but not fired. There are bombs by the hundred. The place would have been blown to bits. Query - Why all the bombs here but never any employment?

The destruction of the town complete - over complete in terms of military employment. Damage by bombs to batteries very great - more in damage to communications and ammunition dumps, foundations than direct hits on guns. This was effective for the convoy approach. But the island could have been held by 5 to 6M light troops with determination who would have stayed in their cover pits till we lifted our bomb and naval barrage and with the terrain in their favor would have slaughtered our troops - brigade by brigade. Ammunition, food, water, medical supplies for months.

Here is the most important point - utter confusion - the whole place a litter of neglected equipment and degeneration which can only mean a complete lack of the will to give any form of resistance. The whole military and civil population anxious to help in every way - only some small desire to save face and so they stuck out the bombardment and then welcomed us with open arms and helped to put everything in working order. This must be a significant cross section of what is to ~~be~~ ⁴⁰⁴

Active hatred of the Germans, contempt of Mussolini.

1-8-37

- 2 -

The food stuffs of prime quality - the German food stores - Danish butter - canned chicken, sausages, mineral water, pumpernickle in fine tin foil.

All equipment of top grade except coast guns. The signal center smashed but reveals a very well organized and intricate system of RDF with direct trunk lines to all important points in Sicily.

As to Civil Affairs the group has done well but even this small island shows the need of organization and careful planning for even the earliest stages. Identification cards needed at once and MP patrols to direct movement and evacuation at the earliest moment. No trouble about food or health. Most important to have a C.A. chief at the right hand of the Commander to make quick decisions and carry them through at once.

One of the worst problems - our own troops pinching MT (ours & captured), our own equipment, (cast helmets, canteens, guns), enemy equipment. It would be wise to have strong orders issued on this before assault.

403

Declassified E.O. 12356 Section 3.3/NND No.

785015

*Am. Toth Pipes
S. 10*

*Am. Toth Pipes
S. 10* (2A)

SECRET - JUSKY

SECRET

1414/2000/6(Tr)

17 APRIL 45

TO: All branches.

1. G(Tr) has received from First Army the following reports on Operation "TORCH".

3 Corps Report
General Comments on this report
Report by G.S.A. First Army
Report by G.E. First Army
Report by G.S.A. First Army
Comments by G.S. (1) on Operation "TORCH"
Facts of Comments by G/G and Services on Operation "TORCH"

2. Officers interested may borrow these reports at any time.

1414/2000/6(Tr)
H.K. HOLLAND
Major, U.S. Army
G(Tr)

NOT TO BE RELEASED TO ANY
ACCREDITED UNOFFICIAL RESEARCHERS ORDER
SOC/ARMY BY TAG/----- DATE -----

1410

401

E

Declassified E.O. 12356 Section 3.3/NND No.

785015

HEADQUARTERS

DATE : 6 MAY 43.

N: 7880.

FORCE 141

MOST SECRET

SUBJECT: 8th Army Instructional
Circular.

141P/2001/2/G(Trg)

6th May 43.

List 'B'

1. G (Trg) has received one copy of the 8th Army Instructional Circular No. 13, including the following:

- (a) The R.A. story of the battle of MIDEWINE - 6 Mar 1943.
- (b) A report on Direct Air Support at the battle of EL HAMMA on 26 Mar 1943.
- (c) Tactics of Parachute Troops.
- (d) Notes on the Use of Area Smoke Screens.
- (e) Enemy Notes on the employment of Mountain Troops.
- (f) Handling of enemy rearward during withdrawal on Eighth Army front - Jan 1943.

2. This circular contains information which may be of interest to various branches. It may be seen in File 141P/2001/2/G(Trg).

HQ, 141 Force,
FIELD.

William P. Jones, 402
Major, G.S.C.2 (Trg).

THIS COPY ONLY MAY BE SENT TO ANY
accredited unofficial researchers Order
Sec/Army by TAG/ ----- date -----

411410

Amgot (2)
PA JM
11/5

Declassified E.O. 12356 Section 3.3/NND No.

785015

ALCOA... HUNNY

ADP... HUNNY

11.10/2001/3/2 (11.10)

DO... HUNNY

"Lessons learned from Amphibious Operations in North Africa."

DISTRIBUTION : -

List "A" + Force 3rd and 4th

low affairs

40

COPY

WAR DEPARTMENT

Auth: A.A.G.

Headquarters, Services of Supply, Initials: ?

Washington, D. C.

Date: Feb 12, 1943.

REGRADED UNCLASSIFIED

ORDER SEC ARMY BY TAG PER

411410

February 12, 1943.

LESSONS LEARNED FROM RECENT AMPHIBIOUS OPERATIONS IN NORTH AFRICA

1. A number of reports have been received at this headquarters regarding the recent amphibious operations in North Africa. Sources include the Commanding General, Western Task Force; the Commanding General, Eastern Assault Force, U.S.A.; the Commanding General, S.O.S.; Western Task Force; and other commanders and staff officers in highly responsible positions. Advantage has also been taken of lectures and personal conferences to obtain intelligence from officers who have returned from the North African Theater.

2. The principal lessons to be derived from these reports are summarized below. Each is developed in a separate annex.

a. The staff of an amphibious task force must be assembled at the earliest possible date in order that detailed plans, including a fixed time schedule for preparation, may be assembled. These plans should include the formulation of a long-range supply program. (Annex A)

b. Troops must be carefully selected, with emphasis on fundamental fighting and service units. (Annex B)

c. Equipment requirements, both as to types and quantities, must be established early enough to provide ample time for procurement, distribution and training. Individuals must not be overloaded with new transition and equipment. (Annex C)

d. The training program must include conditioning for the difficult task of moving supplies from ship to shore and across beaches. Troops must be thoroughly familiarized with new and modified equipment. (Annex D)

e. The design and construction of crates and containers must be improved. Vigorous action is required to expedite the waterproof packaging program. A few details remain to be coordinated in the code-marking system. (Annex E)

f. Proper combat loading is a paramount responsibility. All echelons must take steps to prepare priorities, eliminate unauthorized equipment, insure that all essential equipment is taken, and familiarize themselves with the loading plan. (Annex F)

g. Loading operations must be rehearsed. Serious defects

2. The principal lessons to be derived from these reports are summarized below. Each is developed in a separate annex.

A. The staff of an amphibious task force must be assembled at the earliest possible date in order that detailed plans, including a fixed time schedule for preparation, may be assembled. These plans should include the formulation of a long-range supply program. (Annex A)

B. Troops must be carefully selected, with emphasis on fundamental fighting and service units. (Annex B)

C. Equipment requirements, both as to types and quantities, must be established early enough to provide ample time for procurement, distribution and training. Individuals must not be overloaded with ammunition and equipment. (Annex C)

D. The training program must include conditioning for the difficult task of moving supplies from ship to shore and across beaches. Troops must be thoroughly familiarized with new and modified equipment. (Annex D)

E. The design and construction of crates and containers must be improved. Vigorous action is required to expedite the materiel packaging program. A few details remain to be coordinated in the code-martin system. (Annex E)

F. Proper combat loading is a common responsibility. All echelons must take steps to prepare priorities, eliminate unauthorized equipment, insure that all essential equipment is taken, and familiarize themselves with the loading plan. (Annex F)

G. Lesson of landing craft must be reduced. Serious defects in design, construction, and operation must be eliminated. (Annex G)

H. Communication -- combined, joint, and intra-army --- must be materially improved. (Annex H)

I. It is the responsibility of every person in the military service to take such steps within his power to insure that none of the lessons derived from the recent amphibious operations in North Africa shall go unheeded.

8 Enclosures:

Annex A - Planning	E - Packaging, Crating and Loading
B - Troop Units	F - Combat Loading and Unloading
C - Equipment	G - Landing Craft
D - Training	H - Communication

ANNEX A - PLANNING1. Assembly of Staff

Experience indicates the necessity of assembling the staff of an amphibious task force at the earliest possible date. A major amphibious operation is considered to be one of the most difficult operations in modern warfare; planning must be done late to the smallest detail. Furthermore, it is essential that responsible representatives of all agencies concerned be assembled in close physical proximity. Army and Navy staffs should do their planning in the same room -- not in Washington and Norfolk, respectively.

2. Time Schedule

As soon as an operation has been decided on, and the D.D. of its execution fixed, a detailed and carefully considered time schedule must be prepared to cover all phases of planning and preparation. Definite deadlines should limit the selection of troop units and equipment; the assignment of vessels; the submission of requisitions; the training, concentration and equipping of troops; the shipment of troops, supplies, and equipment to the port of embarkation; and the loading of vessels. No changes should be permitted after the stipulated date. Prompt and irrevocable decisions are as essential in planning as in the presence of the enemy.

3. Supply Plan

A. Despite lip service to logistics, many staff officers are tactics-conscious almost to the exclusion of other considerations. The plans for the North African landing indicate a tendency to over emphasize initial fire power at the expense of transport and maintenance. The inevitable consequence is instability.

B. A long-range supply plan must be incorporated in the operation from the earliest stages. This can be facilitated by early designation of a competent officer charged with all Services of Supply responsibility in the area of operations.

ANNEX B - TROOP UNITS1. Special-Purpose Units

There is a definite tendency for both Army commanders to request only small units and detachments for highly specialized jobs. Enthusiasm and pressure from lobbyists, within and without the Army, undoubtedly contribute to this tendency. Both Army commanders and War Department agencies should resist such pressure unless a clear and proven need exists. Even where there is necessity, careful consideration should be given to the possibility of imposing additional or alternate duties through expanded training of existing units.

2. Excessive Overhead

Closely related to the preceding topic is the question of excessive administrative overhead in combat and service units. Reduction rather than expansion should be the objective.

NOTE: New Tables of Organization, resulting in a saving of approximately 10% in personnel and equipment, have recently been prepared for ground force units. Corresponding revision of Tables of Organization for Services of Supply units is now in process.

3. Utilization of Overhead

Stowing operations procedure and unit training should contemplate the use of cooks and clerks in building up and organizing supply areas during the initial phase of a beach landing. This personnel can be so utilized while the troops are subsisting themselves on emergency rations.

4. Engineer Amphibious Units

The work of Engineer Amphibious Units in landing equipment and supplies is vital to the success of an operation. Their necessary equipment including bulldozers, should not be curtailed in combat landing. (See also paragraph 3, Annex C).

ANNEX C - RECOMMENDATIONS

1. Development of Equipment

If unusual equipment is needed, military requirements must be met well in advance and quantities established promptly. (See paragraph 2, Annex A and paragraph 3, Annex B) Infrared beam markers and telescopes, floating beacons, rocket launchers and projectors — all these and other recent developments must be standardized, procured in quantity, and distributed for training purposes before proper returns can be expected from their use. The advantages and disadvantages of adapting untested equipment must be carefully scrutinized.

2. Amphibian Cars and Trucks

The need for amphibian cars and trucks was clearly established in the North African operation. Several types are now in production.

3. Trucks

The 2½-ton general-purpose truck is highly satisfactory. Organizations should be well provided with these vehicles.

The 1-ton truck lacks capacity and is too high in silhouette. Any attempt to use the 1-ton truck for transportive cargo is largely a waste of effort.

The 1-ton truck is a good all-round lightweight cargo and personnel carrier. This vehicle, however, is slightly too wide to be loaded in LCP boats.

NOTE: Action has been initiated to insure that LCP boats will accommodate 1-ton trucks. Design of the Perry-Walker amphibian (an amphibious tank with turret and top deck adjustable to accommodate cargo or personnel) is being modified to accommodate the 1-ton weapon carrier, which is the widest of the 1-ton vehicles. The 1-ton 6x6 tractor will be of the same width as the 1-ton truck.

4. Rocket Launchers

The Rocket Launcher, AT, M1, was furnished the Western Task Force in large numbers. It appears, however, that men generally abandoned the launchers: they had little or no training in its use, and therefore no confidence in its performance (see paragraph 3 Annex B); they were already over-burdened with equipment (see paragraph 7 below); they failed to encounter suitable targets. In the few reported instances of use, the weapon was effective. No malfunctioning was reported.

NOTE: If the Rocket Launcher, AT, M1, is to be issued for future operations, it is essential that the basis of issue be established promptly and that the weapons be placed in the hands of troops in ample time for familiarization. The same remarks apply to the newly-developed 4.5" Rocket Projector.

v. Williamson of the M. R. R. R.

Annex C. Continued

NOTE: If new carrying devices are needed, requirements must be promptly established in order that procurement and distribution can be effected at an early date.

9. Barrack Bag

The barrack bag is strong, non-absorbent, and of exclusive capacity. A canvas attached with a small, having about 50% of the capacity of the barrack bag, should be provided in that of the "A" bag. The "B" bag should be eliminated for any movement in which canvas is required. Individual clothing and equipment should be reduced accordingly.

NOTE: If such a bag as the canvas attached is necessary, requirements must be promptly established.

10. Latent Compass

The "dry" latent compass is fragile and easily damaged by salt water.

NOTE: An improved liquid-filled latent compass is about to go into large-scale production.

11. Medical Items

a. Syrettes containing morphine provide the only practicable way of administering this narcotic during combat. Large quantities should be provided.

NOTE: Provision has been made for the issue of this item in large quantities.

b. The efficacy of blood plasma was confirmed in this operation. In one instance, 400 seriously injured men were given transfusions at a hastily organized clearing station. Only six died.

12. Radio Equipment

(See paragraph 6, Annex D -- Communication.)

APPENDIX D - TRAINING

1. Unloading Vessels

The results of imperfect training in unloading vessels were clearly evident in the North African landings. Personnel who operated the gear were not familiar with either equipment or stowage; they had taken no part in loading. (See also Annex F)

2. Physical Hardening

Loading supplies is back-breaking work without the buoying excitement of offensive combat. Men must practically sleep on their feet. Particular attention should be given to the physical hardening of those who must do this sort of work. They cannot be conditioned by games, calisthenics, or marching; they must actually manhandle cargo for long hours during darkness, inclement weather and rough seas. Only by this means can they develop the strength and acquire the skills which will make their job possible or efficient accomplishment.

3. Familiarization with Equipment

Numerous instances occurred in the North African operation in which troops had not been trained to operate the wagons and other equipment which they received at the last minute. Provision must be made for thorough familiarization with new or modified equipment. A man lacks confidence in a strange tool; usually he will abandon it. A conspicuous example in the Rocket Launcher, M1 (see paragraph, Annex C)

4. Malfunctioning of Equipment

Many malfunctionings of equipment can be traced to lack of proper training (or discipline) in operation and maintenance. Examples include the M1 Rifle and the Dual Inflated CO₂ Lifebelt. (See paragraphs 5 and 6, Annex C)

5. Communication Personnel

(See Annex H -- Communication)

APPENDIX - PACKAGING, CRATING AND MARKING1. Cardboard Crating

Cardboard and corrugated paper cartons are entirely unsuited to amphibious operations. In addition, substitutes, reduced supplies, and all other items to be unloaded across beaches must be specially packed in suitable water-proof containers. Large quantities of damaged supplies, especially substitutes, were landed in broken cardboard cartons.

NOTE: Although suitable substitutes were in production prior to the North African operation, last-minute demand to meet sailing to Sicily frequently made it necessary to furnish supplies in old-type packages. Much-improved packaging for future operations is needed.

2. Breakage of Wooden Containers

Wooden crates are subjected to even rougher handling in amphibious operations than in normal loading. There was much breakage.

NOTE: A principal cause of breakage is improper application of metal strapping. The 1st Airborne Infantry is now carrying on an intensive campaign to educate inexperienced personnel in the correct use of metal strapping.

3. Excessive Size of Containers

Large numbers of items were packed together in huge crates that required many men to lift and heavy trucks to handle. Such packing is obviously unsuited to the early stages of a landing operation.

NOTE: Excessive size and weight of packages has been brought strongly to the attention of the Supply Service and remedial action is being taken to limit unit load to a practical minimum.

4. Operational Inconvenience

Organization I equipment was badly packed by units at beach stations.

NOTE: Such packing is the responsibility of the unit commander. The Services of Supply, however, are making steps to provide all possible assistance through the Supply Command. It is their duty to set up mobile units in charge of packing experts to furnish advice, supervision, bulk, and materials to units under operations.

5. Marking

a. Inventory (see list) of material (ammunition) color-coded and often carried in the dark.

AGRE: 2-Continued

b. Ground engineer supplies must be distinguished from those intended for aviation engineers (chicken wire, lumber, tarp, etc.). The same condition exists to a lesser degree with respect to Air-Force equipment.

3. Navy supplies are not clearly identified. In an amphibious operation, the Navy should use the Army system, with a distinctive color marking.

NOTE: All of the above facts have been reported to the Joint Military Policy Committee, which is currently taking corrective action.

ANNEX F - COMBAT LOADING AND UNLOADING1. Responsibility and Priority

Commanders down to include platoon leaders must recognize and assume their responsibilities in the combat loading of a vessel. Plans and priorities must be worked out in detail and adhered to. When allowances are set for combat loading, these allowances must be further broken down into priorities for immediate needs, for easy access, and for better cargo. Commanders must be thoroughly familiar with the loading plan.

2. Authorized Equipment

There is a pronounced tendency for organizations and individuals to smuggle all manner of unauthorized and excess equipment aboard transports. In some cases, vehicles have been so loaded with contraband as to overtax the lifting facilities of the ship. On the other hand, units must be carefully supervised to insure that all required items are taken. In one instance a battery commander had no ammunition with him; in several cases, sights and other fire-control instruments were left behind.

3. Vehicles

a. Vehicles should be prepared for action before loading. In at least one instance tanks went into combat with bedding rolls and camouflage nets still strapped to the sides.

b. Drivers should travel on the same ships as their vehicles.

4. Gear

All ships should carry extra cargo gear, with particular attention to rigging for heavy lifts. Slings for wheeled vehicles are great time-savers. Cargo gear should be rigged in ample time for use.

5. Winch Operations

More than one shift of experienced winch crews should be provided. In the Guadalcanal landings, the Navy winch operators worked to the point of physical exhaustion. (See paragraph 2, Annex D)

6. Maraibo Ships

The Maraibo ships included in the Eastern Assault Force were highly satisfactory for combat service. They draw only seven feet at the head and have a large door in the bow. The 60-foot bridge sections which they carried in this operation proved extremely useful.

NOTE: Thirty ships of the LST type ("American Maraibo") are under construction in the United States.

1000000 - Continued

7. Person Dumps

Unloaded supplies should not be concentrated at one point on the beach. They should be dispersed laterally in small dumps, segregated by classes.

8. Salvage

Provision should be made for salvage parties to reclaim abandoned weapons, ammunition, and other stores.

APPENDIX - LANDING CRAFT1. Losses

Whether because of poor design, construction, or improper operation, losses of landing craft were unacceptably heavy, considering the limited hostile resistance encountered. The following table summarizes the reported losses:

Western Task Force

MISSION			LCF(R)		LCM	
TASK FORCE		LCF(L)	w/comp	LCV	Ltr.	TOTAL
	Landing					
LYAUTEY	Craft Used	27	21	86	27	161
	Damaged or					
	Destroyed	9	11	40	10	70(1)
	Landing					
PIEDRA	Craft Used	35	107	162	43	347
	Damaged or					
	Destroyed					137(3)
	Landing					
SIAPA	Craft Used	10	36	53	22	121
	Damaged or					
	Destroyed		7	1	1	9(2)
	Landing					
TOTAL For	Craft Used	72	164	301	92	629
W.T.F.	Damaged or					
	Destroyed					216(3)

(1) - 16 (all types) salvaged later.

(2) - 8 salvaged later.

(3) - The Navy's figures show that there were 161 lost at Pedra.

391

Center Task Force

No. of Landing	No. of boats unable to return	
boats used	From beach after initial trip	Percentage of loss
223	45 (approximately)	20%

Eastern Assault Force

No. of landing	No. of boats unable to return	
boats used	From beach after initial trip	Percentage of loss
104	98 (approximately)	94%

2. Size

The 36-foot craft is too small. As a personnel carrier it does not have the capacity to carry a complete tactical unit the size of a platoon. As a cargo carrier, it is not wide enough to accommodate a full cargo net. If cargo is dumped in it, the heavier packages will seriously damage the boat.

3. Breaching To

Landing craft in inexperienced hands have a pronounced tendency to broach to. Craft which are gently beached will almost invariably broach to if there is any surf; the proper technique is to run the beach with considerable speed ahead. Bulldozers operated by Engineer Amphibian Units are very useful in recovering beached craft. The winch should be used to swing the stern. A sufficient number of bulldozers is allotted to these units; it is a common responsibility to see that enough are given proper priority on combat-loaders.

4. Breaking Up

The smaller landing craft often break up in only moderately heavy seas.

5. Engine Trouble

Considerable engine trouble was experienced on 36-foot and 50-foot craft.

6. Fastenings

The fastenings on the metal ramp of the 36-foot LCP tore loose from the wooden bottom of the boat.

7. Armor

The Commanding General, Western Task Force, states his firm belief that landing boats must be armored against machine gun fire. He says: "What casualties we had from gunfire were due to artillery, but had machine guns been present on shore, where they would have been if the Germans were present, I am sure that our losses would have been terrific."

8. Tank and Artillery Landings

It is very difficult to land tanks and artillery on beaches. A port must be seized whenever possible in order that tanks and artillery may be unloaded with minimum losses and delay.

9. Control

Army observers and commanders are strongly of the opinion that the Army must control and operate all landing craft; that the Army should take over complete control as soon as the ships arrive in the transport area. (See paragraph 10 below)

APPENDIX - Continued

10. Navigation of Landing Craft

Landing craft were very badly handled. Navigation was particularly so. Many craft wandered aimlessly, unable to locate their objective. Others landed at the wrong beaches, sometimes as much as twelve miles from the proper place. It would appear that navigators lacked training, experience, equipment, and information essential for either dead reckoning or piloting. The equipment with which landing craft were equipped have been condemned as worthless. It seems evident that primary reliance must be placed on piloting, at least for shoreward trips. In the absence of marksmen, however, this method presupposes a detailed and accurate knowledge of the appearance of the shore-line from water level at various distances. Photographs are the only means of conveying this knowledge, and these are obviously difficult to obtain in advance of the operation. In the recent operation, some photographs were obtained by submarines recommending, but the number was inadequate. Currently, models of shore-lines are being constructed from captured maps and other intelligence. These models will be photographed from various angles and from various scale distances. Photographs thus obtained will be invaluable, but it seems clear that the necessary intensive study must be confined to a comparatively few selected individuals. The necessity of exercises for a highly trained group of amphibious scouts who can speak on shore and establish visible markers to guide the main body of landing craft. The markers themselves also require careful consideration. Experiments are being continued with infra-red lights, which require the use of a special telescope. 398

essential that the whole problem of navigating landing craft be solved promptly in order that the necessary equipment be obtained and that sound landing doctrine be thoroughly instilled.

NOTE: Under the present division of responsibility between Army and Navy elements of a task force, the matter of navigation is within the sphere of the Atlantic Amphibious Force, which appreciates the problem and is seeking solutions.

GENERAL NOTE: The entire landing craft problem is receiving attention from the Navy, Army Ground Forces, the Chief of Engineers, and the Chief of Transportation.

ANNEX H - COMMUNICATION1. Breakdown of Communication

A glaring deficiency was the almost complete breakdown of communication in certain instances. Maintenance of communication is admittedly difficult in a landing operation. In addition to the problems involved in the broken lateral dispersion of troops along a number of beaches, there also exist the problems of ship-to-shore and shore-to-air contact. Various aspects of the difficulties encountered in the North African landings are summarized in the following paragraphs.

2. Communication Personnel

Communication personnel were technically competent but tactically ignorant. Communication officers were unfamiliar with amphibious operations in general and with detailed plans for the particular operation. It appears that amphibious problems have not received proper attention in service schools. Also, there may be a tendency to promote newly commissioned communication officers to positions of responsibility because of their technical knowledge without giving them the time of the opportunity to fill in their military background.

3. Variations in Plan

Troops were widely scattered and intensified because of failure to land at the time and places scheduled. Communication under such circumstances presents almost insurmountable difficulties.

4. Joint and Combined Radio Procedure

Although no observer brings up the point, it is entirely possible that in actual practice, joint and combined radio procedure has not been completely coordinated. One indication of this possibility is found in the authenticated report that two calls were made for British naval gunfire. In the first case it took one hour to get the fire; in the second, two hours. In another instance it required two hours to obtain air support from carrier-based aircraft.

5. Dispatch Riders

Tests should be initiated to determine the value of landing solo motorcycles and bicycles in the early stages of the assault in order that some communication can be effected by means of dispatch riders.

ANNEX H - Continued

6. Radio Equipment for Amphibious Operations

The following deficiencies exist regarding radio equipment the Infantry regiment:

SCR-284: Too heavy (110 pounds) to be carried by hand. Cannot be operated while being carried.

SCR-195: Too easily masked by hills and trees. (Satisfactory between shore and landing craft.)

SCR-336: Insufficient range. High battery drain.

NOTE: Corrective action is being investigated by the Chief Signal Officer.

SECRET

(ATTACHED TO HEADQUARTERS)

15 February 1943.

MEMORANDUM:

SUBJECT : Lessons of Operation TORCH.

1. Attached herewith is a copy of a letter from N.C.X.F. with which the Commander-in-Chief fully agrees. The Commander-in-Chief wishes particularly to emphasize the following: 38

a. The necessity for naval responsibility in crew training and operation of landing craft. The Navy is and will be in control of landing operations until troops are ashore when such control passes to the Commanding General.

b. Special reference was made to the critical importance of signal communications. Planning for amphibious operations must include the most careful consideration of signal requirements. Naval, Air and Ground Forces must be coordinated. Ship to shore, shore to shore, air-ground and interrelated lateral and axial unit communications must be available. Alternate means of communication must be arranged for up to the limit of ingenuity.

c. Advance plans must foresee and orders must specify the Air Defense Commander of important tactical and administrative localities. This officer must coordinate the three services in local defensive arrangements.

2. This communication is submitted to you for your guidance in preparing plans for future operations.

By command of General EISENHOWER:

W. B. SMITH,
Major General, U.S. Army,
Chief of Staff.

OFFICIAL:

Lowell W. Rooks
LOWELL W. ROOKS,
Brigadier General, G.S.C.,
Assistant Chief of Staff G-3.

DISTRIBUTION:
As for "Compilation of Reports

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Sec/Army by TAG/ date -----
411410

2. The necessity for naval responsibility in crew training and operation of landing craft. The Navy is and will be in control of landing operations until troops are ashore when such control passes to the Commanding General.

b. Special reference was made to the critical importance of signal communications. Planning for amphibious operations must include the most careful consideration of signal requirements. Naval, Air and Ground Forces must be coordinated. Ship to shore, shore to shore, air-ground and interrelated lateral and axial unit communications must be available. Alternate means of communication must be arranged for up to the limit of ingenuity.

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W. E. SMITH,
Major General, U.S. Army,
Chief of Staff.

OFFICIAL:

Lowell W. Rooks
LOWELL W. ROOKS,
Brigadier General, G.S.C.,
Assistant Chief of Staff G-3.

DISTRIBUTION:
As for "Compilation of Reports
on Lessons of Operation TORCH".

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Office of the Naval Commander,
Expeditionary Force,
ALGERIA.

No. 00200/1

7th February, 1943.

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THE COMMANDER-IN-CHIEF, ALLIED FORCES.

LESSONS OF OPERATION TORCH

I have read with interest Staff Memorandum No. 7 giving the military summary of lessons of Operation TORCH. I particularly appreciated the frank and constructive criticism in some reports.

2. My own report on the naval aspect is approaching completion and will be forwarded to you as soon as possible. In the meantime I should like to emphasize certain outstanding points which I think deserve your consideration. These in the main are not "lessons learnt", but well known factors which require to be restated. Comments on certain matters of detail in military reports are attached as an appendix.

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4. No officer commanding a unit will ever be satisfied that he has had adequate preparation and training until his unit is trained and equipped down to the last gaiter button. There are times in history when we can not afford to wait for the final polish. I suggest that it should be made widely known to all units that for TORCH particularly we could not afford to wait, and that the risk of embarking on these large scale operations with inadequate training was deliberately accepted, in order to strike while the time was ripe. We must now push forward our training so that such a situation cannot again arise.

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7. This is one of the oldest lessons of history. Incomparably more damage can be done to a military operation by one bomb or one torpedo striking a ship, than by twenty times that weight of explosive used against personnel or vehicles when they are well deployed ashore. We should never forget it times when our own troops are deployed in operations ashore that the enemy can

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9. I have been associated with combined operations in four areas in this war - The Western Desert, GREECE, SIRIA and "TORCH". In every one of them, naval communications, already heavily loaded with naval operational signals, have in addition had to carry a very large volume of Army and Air communications at all critical phases of the operation.

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13. I cannot agree with the proposal of the Commanding General Centre Task Force that the Army should take control when the troops embark in their landing craft. Until troops are disembarked ashore the operation is a seaborne one and should remain in control of those whose business it is to conduct affairs at the sea. It has to be borne in mind that the matter is not merely one of ferrying boatloads of men ashore but of the responsibility for the safety of a number of valuable ships who are to some extent tied to their landing craft during the period of disembarkation. This responsibility cannot and should not be laid on an Army officer whose primary interest lies with what his men are doing ashore.

/CC-OPERATION.....

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Access not granted
on 1 document (see
paper marker) since
it appears strictly
British with British
views.

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CO-OPERATION

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Admiral of the Fleet

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APPENDIX - LESSONS OF OPERATION "TORCH" Remarks on points of detail.

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APPENDIX TO THE NAVAL COMMANDER EXERCITIONARY FORCE'S LETTER
NO. 00000/1 OF 7TH FEBRUARY, 1942.

LESSONS OF OPERATION "TORCH"

Remarks on points of detail.

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I EASTERN ASSAULT FORCE - REPORT

Operation "TITANIC" - para 2 b.

1. This Operation was planned at a very late stage; the Force was supplied with all possible information which was available to other units, but it is agreed that this information was not as detailed as was necessary and there was insufficient time to assimilate and disseminate it.

Training - para 4 a and 1.

2. The length or extent of a beach is unimportant, provided that two units are available. The shorter the beach, the easier it is to control. A minimum length of 100 yards is essential.

Life preservers - para 14.

3. The British naval type of life preservers (of which 25,000 were stated to be available for issue to troops at an Executive Planning Section Meeting on 24th August, 1942) is designed to be worn under equipment, which should be unbuckled and hanging loose. On landing, these lifebelts can be discarded without disturbing equipment. It is thought that this type of lifebelt would fill all requirements. Nothing is known of the capacity of the other types of equipment mentioned to sustain a man with full equipment.

Medical - para 15.

4. Hospital ships are not permitted by International Law to sail in a convoy, and it is liable to cause confusion if they are required to embark wounded off beaches in the early stages of an assault. They should be routed independently to arrive as soon as conditions are practicable. The presence of a hospital ship in the assault area prior to the assault would obviously entail loss of security. There may be possibilities in the provision of hospital ships (fitted as L.C.I. (L)) with hospital landing craft.

It is suggested that the use of Naval type of Neil-Robertson stretchers would facilitate the handling of wounded ashore.

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Army and Navy Co-operation - para 17.

5. It is fully agreed that a full-dress rehearsal of crews, landing craft and assault troops should train, travel and make the assault together. In this operation, reasons of secrecy and urgency precluded adequate rehearsal.

Landing Craft - para 17 C

6. The choice of type of Landing Craft in TORCH was limited by the types available. In deciding on an improved design, the limiting factors to be considered are:-

Power.....

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LESSONS OF OPERATION "TORCH" CONTINUED

6.(cont)

- (a) Power and tackle available for hoisting in and out of assault ships.
- (b) The choice between armour plating and reliable compasses - the two appear to be incompatible at present.
- (c) On the whole the larger the Landing Craft are, the ³⁸³ ~~382~~ likely they are to become unmanageable and broach-to in any kind of sea.

Calls for Air support and Naval gunfire - paras 17 d, e, f.

7. A. Air support

It was pointed out during the planning of TORCH that a delay of 1½ to 2 hours would have to be accepted when British Naval air support was called for. This delay was caused by various factors, the more important being:-

- (a) The primary requirement was fighter protection, and the carrier forces available for the operation were insufficient to provide both types of support simultaneously.
- (b) The fact that carriers, which require considerable sea room, are usually from 40 to 50 miles from the target.
- (c) The time taken from the receipt of the call for support to the arrival of the planes over their target is about 1½ hours, allowing for the time required to cease operating fighters, to range, run up and fly off a bombing force, and for the force to find and reach their target.

B. Naval gunfire

In considering criticisms of the delays in answering calls for gunfire support there are naval aspects of the matter worthy of consideration.

It is not practicable for Fleet units such as cruisers and larger ships to operate indefinitely close to a hostile coast ready to bombard at short notice in an area open to enemy submarines and air attack. For these reasons, it is necessary for heavy supporting ships to stand off to seaward by day, up to 15 or 20 miles from the coast, and to keep moving at 18 - 20 knots, ready to come in at high speed, if a call for fire is received.

The time taken from the moment the Military Commander required fire until the signal reached the ship was far too long, and this, coupled with the time taken to steam into position, resulted

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The time taken from the moment the Military Commander required fire until the signal reached the ship was far too long, and this, coupled with the time taken to steam into position, resulted in an interval of up to two hours which is evidently unacceptable.

The remedy lies firstly in improving the methods of communication between Army commanders and ships, and secondly for Army commanders to forecast, when at all possible, the times that bombardments will be necessary to suit their military plans, issuing warnings to ships and cancelling them at the last moment if the military situation does not require them.

C.

LESSONS OF OPERATION "TORCH" CONTINUED

C. Use of the Support Wave

Delays in obtaining support, either by naval bombardment or by air, can be reduced to a minimum if the Support Wave is properly established and used. In TORCH it was intended to work down to Brigades on the support wave, and H.Q. ships and aircraft carriers kept watch on it in order to get calls for support direct from army formations. No use was made of this special wave, and consequently calls for support had to be signalled via the F.O.O.'s wave to their own ship, and thence on naval operational wave to the H.Q. ship. This was for the greater part of the time, the only channel of communication between the army ashore and the Headquarters ship. It is considered that Battalion Headquarters and above should keep this wave.

Beach Organization - para 16.

3. The landing table should have been altered so. This must be produced sufficiently early in the planning stage to enable the priority of loading of the LT ships to be controlled, and ships loaded in the reverse sequence of the priority of stores to come out. The handling of supplies on the beach is the responsibility of the Shore party, a military organization.

II. HEADQUARTERS CENTRED TASK FORCE - PILOT

Disembarkation (para 3 & (3))

1. This delay was probably due to the difficulty consequent on fully-equipped soldiers leaving a ship-part in the dark, descending an iron-runged ladder, and getting into a lively landing craft. The provision of dummy belly-ports for belly training on passage, must wraps, and ladders from the decks of the landing craft into their wells should improve the situation, and frequent rehearsals should solve the difficulty.

Air protection (para 3 & (4))

2. It was found in Operation TORCH that Naval fighter protection had to be maintained behind the period assigned. This was possible because little enemy opposition was encountered. The urgency of

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II HEADQUARTERS CENTRE TASK FORCE - REPORTDisembarkation (para 3 a (3))

1. This delay was probably due to the difficulty consequent on fully-equipped soldiers leaving a ship-port in the dark, descending an iron-runged ladder, and getting into a lively landing craft. The provision of dummy sally-ports for daily training in passage, guest wards, and ladders from the decks of the landing craft into their wells should improve the situation, and frequent rehearsals should solve the difficulty.

Air protection (para 3 a (4))

2. It was found in Operation TORCH that Naval fighter protection had to be maintained behind the period assigned. This was possible because little enemy opposition was encountered. The urgency of seizing an airfield for land based fighters is fully concurred in.

Naval gunfire support (para 7 d)

3. It is agreed that bombarding ships must be kept informed of the location of friendly troops. The moral effect, of naval bombardment, particularly when synchronized with Para-bombing, can be very great,

Chemical Warfare Section (para 8 a)

4. Stocks of all types required was provided in the assault shipping on draft on a liberal scale, but was apparently not called for.

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LESSONS OF OPERATION "TORCH" CONTINUED

III HEADQUARTERS 1ST INFANTRY DIVISION - REPORT

Loading of Combat Ships (para 4 g)

1. This difficulty could be solved by the provision of Class I MT ships; in this Operation there were insufficient numbers of this type of ship available.

Employment of Landing Craft. (para 5 f)

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2. Landing craft ought to have been kept fully employed while weather conditions were suitable. It is considered that 60% spare crews - officers and men - are required to give relief. More experienced and better disciplined crews are required when conditions are difficult, i.e. during the assault, at night and in heavy weather.

IV HEADQUARTERS NINETEENTH ENGINEERS - REPORT

Troops, Landing Craft and Beaches. (para 4 C et seq)

1. The troops went on board their ships for about 24 days, during which time every opportunity should have been taken to familiarise them with the Landing Craft carried. In the majority of ships manning exercises were carried out daily.
2. No effective craft should have been permitted to lie idle. In the landing of heavy vehicles and certain bulky stores, risks must be accepted in order to expedite the operation. In certain sectors it was ruled that landing tables were not to be taken out of the ships as a security measure: consequently they were not provided to commandants of craft. This measure caused more trouble than it was worth.
3. With reference to the markings of beaches, the safe points to land were marked by transit marks or lights by night.
4. As far as is known the troops were landed within the planned expectations. An acute shortage of landing craft was felt in the landing of vehicles and stores, in the early stages. The ample provision of Landing Craft Tank is the remedy.
5. Paragraph h (5) The control room in the Control ship is fitted for rapid communications with the Army Commander ashore, and a joint naval and military committee presided over by the assistant SNOL adjust the landing table to the military requirements, issuing orders to the landing craft accordingly.

TV HEADQUARTERS AND TELEVISION ENGINEERS • REPORT

Twycross, *Landings Craft and Hatches*. (para 4.0 et seq)

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5. Paragraph 2 (5) The control room in the Control ship is fitted for rapid communications with the Army Commander ashore, and a joint naval and military committee presided over by the assistant SNOL adjust the landing table to the military requirements, issuing orders to the landing craft accordingly.
6. Inefficient handling of landing craft, was in some cases caused by the rapid expenditure of this branch of the Service, at a time when insufficient craft were available for the task, with the result that a number of crews were not nearly adequately trained as explained.
7. Paragraph 2 (7) The number of craft available is determined by the existing capacity of the assault shipping, but can be increased by landing craft, tank, and also by landing Craft Infantry (large).
8. Paragraph 2 (3) The organisation allowed for this, but few good landing points were found on the beaches selected. The small rise and fall of the tide in the 2-4 days when the assault is conducted makes the difficulties on beaches with flat gradients below high water level.

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LESSONS OF OPERATION TORCH CONTINUED

V HEADQUARTERS, 1st ENGINEER AFROBIAN BRIGADE - REPORT

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Organization and Training

1. With reference to paragraph III A., concur.

Equipment - Landing Craft. (para IV A.)

2. Fouling of screws should not occur with properly trained crews. There is no alternative to the use of keel anchors, but there is a requirement for a special craft designed to haul off stranded craft. This craft would require to be easily handled, with twin screws, good anchors and a winch aft. Equipment should include line-throwing apparatus and adequate saws.

3. It is agreed that British LCAs would be improved with higher power, if the consequent reduction in endurance is acceptable. It is suggested that diesel engines and the Hotchkiss Tunnel type of propulsion would give more power and less risk of propellers fouling.

VI HEADQUARTERS, WESTERN TASK FORCE - REPORT

- i. Paragraph d on page 31. The remarks of the Commanding General Western Task Force 4th fully concurred in.

VII HEADQUARTERS FIRST PROVINCIAL BRIGADE, WESTERN TASK FORCE - REPORT

1. The remarks in para 1-3-2 concerning the necessity of accustoming troops to the effect of gunfire, particularly naval gunfire, are particularly concurred in. Any battle training that can possibly be given to the troops before the assault is sure to be of value, and the Navy should be included in such training.

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CO-OPERATION

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W. R. Cunningham

ADMIRAL OF THE FLEET

APPENDIX - LESSONS OF OPERATION "TORCH": Remarks on points of detail.

Declassified E.O. 12356 Section 3.3/NND No. 785015

MOST SECRET

APPENDIX TO THE JAPANESE DEMANDS FOR THE DEMONSTRATION FORCE'S LETTER
ACCORDING TO THE JAPANESE DEMANDS FOR THE DEMONSTRATION FORCE'S LETTER

REMARKS ON OPERATION "MOCHI"

Remarks on points of detail.

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1. EASTERN ASSAULT FORCE - SUMMARY

Operation Summary - para 2 b.

- i. This Operation was planned at a very late stage; the Force was supplied with all possible information which was available to other units, but it is agreed that this information was not as detailed as was necessary and there was insufficient time to assimilate and disseminate it.

Training - para 4 a and 5.

2. The length of duration of a beach is unimportant, provided that two units are available. If shorter the beach, the easier it is to control. A minimum length of 100 yards is essential.

Life preservation - para 11.

3. The British naval type of life preservers (of which 25,000 were stated to be available for issue to troops at an Executive Planning Section Meeting on 7th August, 1942) is designed to be worn under equipment, which should be untroubled and hanging loose. On landing, these lifebelts can be worn or without disturbing equipment. It is thought that this type of lifebelt would fill all requirements. Nothing is known of the capacity of the other types of equipment mentioned to sustain a man with full equipment.

Medical - para 15.

4. Hospital ships are not permitted by International Law to sail in a convoy, and it is liable to cause confusion if they are required to embark wounded off beaches in the early stages of an assault. They should be routed independently to arrive as soon as conditions are practicable. The presence of a hospital ship in the assault area prior to the assault would obviously entail loss of security. There may be possibilities in the provision of hospital ships (fitted as L.C.I.(L)) with hospital landing craft.

It is suggested that the use of Naval type of Neil-Robertson stretchers would facilitate the handling of wounded ashore.

1. This Operation was planned at a very late stage; the Force was supplied with all possible information which was available to other units, but it is agreed that this information was not as detailed as was necessary and there was insufficient time to assimilate and disseminate it.

Training - para 4, 5 and 6.

2. The length of duration of a beach is unimportant, provided that two units are available. The shorter the beach, the easier it is to control. A minimum length of 100 yards is essential.

Life preservers - para 11.

3. The British and type of life preservers (of which 25,000 were stated to be available for issue to troops at an Executive Planning Section Meeting on 24th August, 1942) is designed to be worn under equipment, which should be unobtrusive and hanging loose. On landing, these lifebelts can be discarded without disturbing equipment. It is thought that this type of lifebelt would fill all requirements. Nothing is known of the capacity of the other types of equipment mentioned to sustain a man with full equipment.

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It is suggested that the use of Naval type of Neil-Robertson stretchers would facilitate the handling of wounded ashore.

Army and Navy Co-operation - para 17.

5. It is fully agreed that a full-scale rehearsal of crews, landing craft and assault troops should train, travel and make the assault together. In this operation, reasons of secrecy and urgency precluded adequate rehearsal.

Landing Craft - para 17.

6. The choice of types of Landing Craft in TORCH was limited by the types available. In deciding on an improved design, the limiting factors to be considered were:

Power.....

LESSONS OF OPERATION "TORCH" CONTINUED

6.(cont)

- (a) Power and tackle available for hoisting in and out of Assault ships.
- (b) The choice between armour plating and reliable compasses - the two appear to be incompatible at present.
- (c) On the whole the larger the Landing Craft are, the more likely they are to become unmanageable and broach-to in any kind of sea.

Calls for Air support and Naval gunfire - paras 17 d, e, f. 374

7. A. Air support

It was pointed out during the planning of TORCH that a delay of 1 1/2 to 2 hours would have to be accepted when British Naval air support was called for. This delay was caused by various factors, the more important being:-

- (a) The primary requirement was fighter protection, and the carrier forces available for the operation were insufficient to provide both types of support simultaneously.
- (b) The fact that carriers, which require considerable sea room, are usually from 40 to 50 miles from the target.
- (c) The time taken from the receipt of the call for support to the arrival of the planes over their target is about 1 1/2 hours, allowing for the time required to cease operating fighters, to range, run up and fly off a bombing force, and for the force to find and reach their target.

B. Naval gunfire

In considering criticisms of the delays in answering calls for gunfire support there are naval aspects of the matter worthy of consideration.

It is not practicable for Fleet units such as cruisers and larger ships to operate indefinitely close to a hostile coast ready to bombard at short notice in an area open to enemy submarines and air attack. For these reasons, it is necessary for heavy supporting ships to stand off to seaward by day, up to 15 or 20 miles from the coast, and to keep moving at 18 - 20 knots, ready to come in at high speed, if a call for fire is received.

The time taken from the moment the Military Commander required fire until the signal reached the ship was far too long, and this, coupled with the time taken to steam into position, resulted in an interval of up to two hours which is evidently unacceptable.

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The remedy lies firstly in improving the methods of communication between Army commanders and ships, and secondly for Army commanders to forecast, when at all possible, the times that bombardments will be necessary to suit their military plans, issuing warnings to ships and cancelling them at the last moment if the military situation does not require them.

C.

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LESSONS OF OPERATION "TORCH" CONTINUED

C. Use of the Support Wave

Delays in obtaining support, either by naval bombardment or by air, can be reduced to a minimum if the Support Wave is properly established and used. In TORCH it was intended to work down to Brigades on the support wave, and H.Q. ships and aircraft carriers kept watch on it in order to get calls for support direct from army formations. No use was made of this special wave, and consequently calls for support had to be signalled via the F.O.O.'s wave to their own ship, and thence on naval operational wave to the H.Q. ship. This was for the greater part of the time, the only channel of communication between the army ashore and the Headquarters ship. It is considered that Battalion Headquarters and above should keep this wave.

Beach Organisation - para 16.

3. The landing table should have been altered to. This must be produced sufficiently early in the planning stage to enable the priority of loading of the MT ships to be controlled, and ships loaded in the reverse sequence of the priority of stores to come out. The handling of supplies on the beach is the responsibility of the Shore party, a military organisation.

II HEADQUARTERS CENTRE T.A.S. FORCE - REPORT

Dissemination (para 3 e (3))

1. This delay was probably due to the difficulty consequent on fully-equipped soldiers leaving a ship-part in the deck, descending an iron-runged ladder, and getting into a lively landing craft. The provision of dummy scally-parts for daily training on passage, westwards, and loaders from the decks of the landing craft into their wells should improve the situation, and frequent rehearsals should solve the difficulty.

Air protection (para 3 e (4))

2. It was found in Operation TORCH that Naval fighter protection had to be maintained behind the period assigned. This was possible because little enemy opposition was encountered. The urgency of seizing an airfield for land-based fighters is fully concurred in.

Naval gunfire support (para 7 d)

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II HEADQUARTERS CENTRE TASK FORCE - REPORT

Disembarkation (para 3 e (3))

1. This delay was probably due to the difficulty consequent on fully-equipped soldiers leaving a sally-port in the dark, descending an iron-runged ladder, and getting into a lively landing craft. The provision of dummy sally-ports for daily training on a sally-boat, guest wards, and loaders from the decks of the landing craft into their wells should improve the situation, and frequent rehearsals should solve the difficulty.

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Naval gunfire support (para 7 j)

3. It is agreed that bombardment ships must be kept informed of the location of friendly troops. The moral effect, of naval bombardment, particularly when synchronised with fire bombing, can be very great,

Chemical Warfare Section (para 8 e)

4. Smoke of all types required was provided in the assault shipping and craft on a liberal scale, but was apparently not collected.

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LESSONS OF OPERATION "TORCH" CONTINUED

III HEADQUARTERS 1st INFANTRY DIVISION - REPORT

Loading of Combat Ships (para 4 c)

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1. This difficulty could be solved by the provision of Class I MT ships; in this Operation there were insufficient numbers of this type of ship available.
2. Landing craft ought to have been kept fully employed while weather conditions were suitable. It is considered that 60% spare crews - officers and men - are required to give relief. More experienced and better disciplined crews are required when conditions are difficult, i.e. during the assault, at night and in heavy weather.

Employment of Landing Craft. (para 5 f)

IV HEADQUARTERS NINETEENTH ENGINEERS - REPORT

Troops, Landing Craft and Beaches. (para 4 c et seq)

1. The troops were on board their ships for about 24 days, during which time every opportunity should have been taken to familiarise them with the Landing Craft carried. In the majority of ships manning exercises were carried out daily.
2. No effective craft should have been permitted to lie idle. In the landing of heavy vehicles and certain bulky stores, risks must be accepted in order to expedite the operation. In certain sectors it was ruled that landing tables were not to be taken out of the ships as a security measure: consequently they were not provided to crews of craft. This measure caused more trouble than it was worth.
3. With reference to the markings of beaches, the safe points to land were marked by transit marks or lights by night.
4. As far as is known the troops were landed within the planned expectations. An acute shortage of landing craft was felt in the landing of vehicles and stores, in the early stages. The ample provision of Landing Craft Tank is the remedy.
5. Paragraph a (5) The control room in the Control ship is fitted for rapid communications with the Army Commander ashore, and a joint naval and military committee presided over by the Assistant RNOL adjust the loading table to the military requirements, issuing orders to the

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5. Paragraph 2 (5) The control room in the Control ship is fitted for rapid communications with the Army Commander ashore, and a joint naval and military committee presided over by the assistant SNOL adjust the landing table to the military requirements, issuing orders to the landing craft accordingly.
6. Inefficient handling of landing craft, was in some cases caused by the rapid expansion of this branch of the Service, at a time when insufficient craft were available for training, with the result that a number of crews were not nearly adequately trained or disciplined.
7. Paragraph 2 (7) The number of craft available is determined by the carrying capacity of the assault shipping, but can be increased by landing craft, tank, and now also by Landing Craft Infantry (large).
8. Paragraph 2 (8) The organisation allowed for this, but few good landing points were found on the beaches selected. The small rise and fall of the tide in the Mediterranean accentuates the difficulties on beaches with flat gradients below high water level.

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LESSONS OF OPERATION TUNCH CONTINUED

V HEADQUARTERS, 1st BRITISH AIRBORNE PARADE - REPORT

Organisation and Training

1. With reference to paragraph III A., concurred.

Equipment - Landing Craft, (para IV A.)

2. Hoisting of screws should not occur with properly trained crews. There is no alternative to the use of kedge anchors, but there is a requirement for a special craft design 1 to haul off stranded craft. This craft would require to be easily handled, with twin screws, good anchors and a winch lift. Equipment should include line-throwing apparatus and adequate hawsers.

3. It is agreed that British LCs would be improved with higher power, if the consequent reduction in endurance is acceptable. It is suggested that Miesel engines and the Hotchkiss Tunnel type of propulsion would give more power and less risk of propellers fouling.

VI HEADQUARTERS, WESTERN TASK FORCE - REPORT

1. Paragraph 6 on page 31. The remarks of the Commanding General Western Task Force are fully concurred in.

VII HEADQUARTERS FIRST PROVISIONAL BRIGADE, WESTERN TASK FORCE - REPORT

1. The remarks in para 1-3-2 concerning the necessity of accustoming troops to the effect of gunfire, particularly naval gunfire, are particularly concurred in. Any battle training that can possibly be given to the troops before the assault is sure to be of value, and the Navy should be included in such training.

Appendix "C"
(Reference Para. 5)

SECRET

Subject: R.A. Notes on the Offensive by Eighth Army from 23 Oct - 4 Nov
on the El Alamein Position

Director, Royal Artillery, War Office.
Inspector of Artillery, War Office.
School of Artillery, Larkhill.
H.G.R.A., G.H.Q. India.
M.G.R.A., Land Forces, Australia.

General Headquarters,
Middle East Forces.

CRUE/37965/2/PA

14 Dec 42.

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Copy to: Comdt., H.E. Staff School.
Comdt., H.E. Junior Staff School.
U.S. Army H.Q., H.E.
Comdt., H.E. Training Centre.
Comdt., H.E. School of Artillery.

Copy to: D.M.O.

1. In forwarding the attached report of B.R.A. Eighth Army, I must make the following observations; some of which merely stress what is to be found in the report, others I have discussed with B.R.A. Eighth Army and he agrees to their insertion.
2. The following very special conditions under which the battle was fought must be stressed.
 - (a) While the wiring of the German positions in the southern sector was very strong, that on the front attacked was inadequate and did not present a serious problem.
 - (b) The enemy apparently possessed an almost complete knowledge of our battery positions. Although he had considerable superiority in medium and heavy artillery he made little use of it. He apparently made no use of these in any way to counter our artillery, nor did he make use of alternative positions to avoid our C.B. efforts. In fact, his artillery was most inefficiently handled.
 - (c) In the desert it is a waste of time to attempt to conceal anything by camouflage from the camera in an aircraft. All that can be attempted is to deceive, hence the necessity for irregularity in gun positions. The enemy did not appear to be aware of this, hence the great proportion of C.B. locations derived from air photographs.
 - (d) The ground over which the battle was fought was almost dead flat, and there were no O.P.s with any appreciable command.
 - (e) We enjoyed almost complete air superiority. This, together with the inefficiency of the enemy artillery permitted far greater concentrations of guns and vehicles close up than would have been possible in other circumstances.

7 pages
100/581
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3. With regard to the Div Arty of Arm Divs I would call attention to para. 10 of the report. The present organization of an Arm Div was designed early this year. Since then a division thus constituted has practically never been used with both its Arm and Motor or Lorried brigades in close co-operation. Nothing has therefore been learnt regarding the control of the Div Arty of Arm Divs, since the Regts have always been grouped with their respective Brigades.

4. During night attacks, the greatest difficulty of the infantry has always been that of keeping direction. This was, on one occasion, solved by stationing Bofors A.A. guns well forward on the extremities of the start line. They fired periodically on the line of advance. The tracer showed clearly the flanks of the attack.

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5. Coloured smoke is used by the Germans to mark objectives, flanks of advance, etc. It would also be of use in situations where it is difficult to distinguish ones own ringing sounds. I am making a separate report on this question.

(sd) A. Maxwell,
Major-Gen. Royal Artillery.

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SECRET
(EQUALS BRITISH MOST SECRET)
R.O.R.A. Eighth Army

SECRET

R.A. Notes on the Offensive by Eighth Army from
23 Oct - 4 Nov on the El Alamein Position

Note:

These notes cover the period of battle from its start on the night 23/24 Oct to the breakthrough on the 4 Nov. The object of the main attacks were to wear down the enemy's resistance and to make a gap through which our armour could be passed. The main attacks were made by the infantry of 30 Corps in the North, though subsidiary attacks were made by 13 Corps in the South. The two armoured divs of 10 Corps entered the salient made on the first night by the main infantry attack at dawn on the following day, in an effort to break through various armoured divisions and bdes remained in the salient until the final breakthrough occurred. The situation was thus peculiar in that the Corps were deployed in a rather small area, in which there was considerable congestion. The bulk of the artillery of 10 Corps assisted in the support of the infantry attacks of 30 Corps, including the initial attack. The majority of the attacks were made by night in bright moonlight. During the period under review, our armoured action consisted generally of long range tank gun duels with enemy tanks.

The ground was generally flat and featureless, but with slight undulations and ridges which when captured gave fair observation. Some of our forward gun positions were overlooked by the enemy F.D.s prior to the first attack, but they were occupied by night and were not spotted.

The enemy had held his position for nearly four months and had had ample time to prepare his defensive layout which consisted of outpost, battle and reserve positions in great depth and with many extensive minefields but with only thin belts of concertina wire. During the operation he launched several local counter attacks, many with tanks, most of which were unsuccessful, a few only gaining a very limited success.

1. Fire Plans

(i) In the first main attack, made in bright moonlight by four divs of 30 Corps on the night 23/24, the frontage of attack was some 7,000 yards, and 360 - 25-prs which included 72 - 25-prs from 10 Corps and 48 ad guns were used to give support. In addition for the initial phases some 48 - 25-prs of 4 Ind Div on the southern flank of the attack was available to assist, making a total of 408 - 25-prs. The concentration of artillery at this stage was thus about one 25-pr per 17 yards of the frontage of attack. The attack was to go to a depth of some 4,000 yds. The artillery was under the command of the C.C.R.A. Ample time was available for preparation. A tentative allotment of artillery in support of each Div was made by the C.C.R.A., and preliminary fire plans were then made by Divs and later adjusted by the C.C.R.A.

As the enemy dispositions were well known from overprinted maps showing his defences as seen on air photos, and in the case of his forward defences, from reports of ground observers and patrols, the fire plan took the form of concentrations on all prepared defensive localities, the fire lifting from locality to locality at an average rate of 100 yds in 3 minutes. As the

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As the enemy dispositions were well known from overprinted maps showing his defences as seen on air photos, and in the case of his forward defences, from reports of ground observers and patrols, the fire plan took the form of concentrations on all prepared defensive localities, the fire lifting from locality to locality at an average rate of 100 yds in 3 minutes. As the infantry paused on their first objective, the programme listed till Z + 185. In two localities where the enemy defences were less well defined the support took the form of a barrage. The average rate of fire was about 2 r.p.g. per min.

For 20 minutes before zero all guns were used on Counter Battery neutralisation.

At various phases of the attack up to three med regts and four field regts were used on C.B. tasks, but at other times, all available guns, including the Med arty were concentrated on the enemy's forward localities.

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The fire plan was undoubtedly successful, and the infantry reached their first objective, except for a few isolated pockets of resistance. Prisoners commented on the devastating effect of the fire. The effect of the C.B. fire is discussed in greater detail in para. 5 below. It was unquestionably successful in practically silencing the hostile artillery.

(ii) In the attack carried out by troops under command of 2 M.Z. Div by moonlight on the night 1/2 Nov, little was known of the enemy defenses, and in consequence, as adequate guns were available, the fire plan consisted primarily of a creeping barrage. This barrage had the merit of simplicity, it was absolutely straight, started on a grid line on a frontage of 4000 yds and moved exactly at right angles to the opening line to a depth of 4000 yds at the rate of 100 yds per 2 1/2 mins. The barrage did not extend beyond the frontage of the Inf attack, but five field and three med regts were employed on concentrations on known and likely enemy localities in the barrage lane, and on the flanks of the barrage to about 2000 yds on each side. The number of guns employed on the barrage was 192 and on concentrations 168. This gave one 25-pr per 21 yds of the barrage, excluding the concentrations in the rear of it, and an average of one fd or med gun per 22 yds over the total 8000 yds covered by the fire plan. The average rate of fire was 2 r.p.g. per min. As before, the attack was preceded by concentrations of all available guns on hostile btys.

The barrage was very successful and the infantry gained their objectives with comparatively few casualties. As in the first attack the enemy artillery was to all intents silenced.

(iii) In the subsidiary attack carried out by 13 Corps in the south on the night 23/24 Oct., support was by a mixture of barrage and concentrations, preceded as in 30 Corps by concentrations on enemy btys and located A/Tk guns for 30 mins. No med arty was available. The operation of mine lifting took a long time owing to heavy opposition and at one period enemy artillery opened very heavy fire. A repetition of the original C.B. programme was ordered and the effect was excellent.

(iv) Several smaller attacks were carried out, and were generally supported by concentrations. In a night attack by 51 Div, supported primarily by the Arty of 10 Corps, there was no clearly defined start line, and the enemy was some distance away. In order to ensure getting the infantry up to the barrage, the opening line (1,500 yds in front of the inf) was fired at a slow rate of fire (half "very slow") for 55 mins. The inf concerned are convinced of the value of this fire as a means of getting troops under these conditions formed up in the right place facing in the right direction. On another occasion a similar type of fire was used in 15 Corps, with complete success.

It is considered that in desert warfare, the barrage should always pause on the opening line long enough to ensure that the infantry have time to close up to it. It should also pause for a considerable time a few hundred yards beyond the final objective thus indicating the objective to any infantry who may have been temporarily held up.

(v) The chief artillery lesson to be deduced from these series of successful attacks against very strongly fortified positions, some admittedly not held in great strength, others held by troops, a large proportion of whom were Italians of a not very high category, but some particularly on the front of attack held entirely by determined and experienced German infantry, is the

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(iv) Several smaller attacks were carried out, and were generally supported by concentrations. In a night attack by 51 Div, supported primarily by the Arty of 10 Corps, there was no clearly defined start line, and the enemy was some distance away. In order to ensure getting the infantry up to the barrage, the opening line (1,500 yds in front of the inf) was fired at a slow rate of fire (half "very slow") for 55 mins. The inf concerned are convinced of the value of this fire as a means of getting troops under these conditions formed up in the right place facing in the right direction. On another occasion a similar type of fire was used in 15 Corps, with complete success.

It is considered that in desert warfare, the barrage should always pause on the opening line long enough to ensure that the infantry have time to close up to it. It should also pause for a considerable time a few hundred yards beyond the final objective thus indicating the objective to any infantry who may have been temporarily held up.

(v) The chief artillery lesson to be deduced from these series of successful attacks against very strongly fortified positions, some admittedly not held in great strength, others held by troops, a large proportion of whom were Italians of a not very high category, but some particularly on the front of attack held entirely by determined and experienced German infantry, is the value of centralised control of artillery and that a really heavy concentration of artillery fire put down on a carefully thought out plan will so neutralise the enemy, that infantry, unsupported by armour, will be able to gain their objectives without undue casualties. This deduction merely confirms what is already known, but none the less should be noted as the need for adequate artillery support is so frequently overlooked in training. Nearly all prisoners captured speak of the great effect of our artillery fire. Unfortunately no occasion arose when the action of armour was supported by heavy concentrations of artillery fire.

(vi) Another lesson is that the reports of enemy tanks as to the position of enemy localities can rarely be accepted in the desert unless confirmed by air photos. Their reports were, however, invaluable in deciding whether known localities were or were not occupied at night. Fixing the correct targets for concentrations is often very difficult and it was found that air photos plus the very accurate information recorded by the C.B. sections were the best sources of fact.

(vii) It will be noted that the average rate of fire during the support for the two main attacks was only 2 r.p.s. per min, though at times the rate was considerably greater. This rate may seem slow, but it must be remembered that both attacks were made by night, went to a depth of 4,000 yds and that the initial attack took 3 hours to which must be added some 1/2 hour of counter battery fire. In the attack by troops under command of the M.Z. Div the rate of fire was to some extent limited by the time available in which to bring forward ammunition. Observers commented on the accuracy of the fire, and it is considered that this was to a great extent due to the rate of fire not being excessive for lying by night and for the time during which it had to be continued. Moreover a comparatively slow rate of fire enables individual detachments and guns to be rested, guns in turn to be maintained, and does not cause overheating.

2. The effect of Field and Medium Arty fire on Tanks

(i) When enemy tanks in any number, but not too dispersed, were seen from O.Ps, concentrations of arty fire were generally put down on them. Opinions differ as to the extent of damage caused to enemy tanks by such concentrations. This is to some extent due to the fact that the target was quickly obscured by dust, and that there were frequently derelict tanks already in the area. In one case a regimental concentration was fired on some 30 enemy tanks with the result, it is alleged, that 5 were set on fire, a few others were stopped and the remainder withdrawn. In another case the fire of two div artys plus 3 med regts was concentrated on a map square in which some 60 tanks of 21 Panzer Div were temporarily halted. The casualties to tanks are unknown but it is thought several were hit and the division put up a smoke screen and disappeared. On a third occasion a med regt fired a regimental concentration on to 15 to 20 enemy tanks. After the dust had cleared, 5 were seen to be on fire and it is thought others were being towed away. Probably in many cases no tanks were destroyed or even hit, but as far as is known on every occasion on which a heavy concentration of heavy arty fire was put down on to enemy tanks, they either withdrew or changed direction. Such fire invariably makes the enemy tanks close down, and also prevents them refuelling and replenishing ammunition in the forward area before launching an attack, a proceeding they have carried out in the past.

(ii) There seems no doubt that a direct hit from a med arty shell will knock out a tank at any range and cases are quoted of this occurring at 3,000 yds and in a previous battle at 17,000 yds. A 25-pr H.E. at long ranges only knocks out the tanks if it hits the track or if it lands on top of the tank where the armour is thin, when it penetrates and generally sets the tank on fire. A near miss is not effective, and the fact remains that the chances of obtaining direct hits with any form of indirect firing must be small.

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(iii) The conclusion is that 25-pr, at anything but short ranges is not a good killer of tanks but that heavy concentrations, particularly if the fire of mediums is included, are effective in disorganising enemy tank formations and upsetting their plans. Casualties to enemy tanks must depend on the extent of their dispersion.

(iv) Firing direct in its secondary role a troop of 25-prs can knock out tanks at short ranges, but as an A/Tk weapon a 25-pr is far inferior to the 6-pr.

3. Regimental and Divisional Artillery Concentrations.

(i) Apart from concentrations of artillery fire on enemy tanks, and concentrations which formed part of fire plans, concentrations were put down on other targets such as enemy M.T. and A/Tk guns, nearly all with good

effect. It is considered that such concentrations should always be fired with a zero hour, the moral effect of a large number of shells arriving simultaneously from different directions is then very great. On three occasions when subjected to this type of fire, crews of enemy tanks were seen to jump from their tanks and run away.

(ii) The technique of putting down concentrations varied. In one Corps a standard concentration, both for all armed regts, known as a "stonk" was evolved, in which the fire of blys and regts was distributed over an area of definite size on a pre-conceived plan based on one map reference and the bearing of the front of the concentration. In other cases the fire of blys or regts was superimposed on a single map reference, and in the case of regimental concentrations moved from place to place in a large target area. Both methods should be understood. Each is suited to a definite type of target. Standard ammunition expenditure as for "LL" calls was generally used. The basis of all concentrations was a map reference which could sometimes be taken from the map, but was more often found by preliminary registration. The time allowed for the giving of orders by the C.R.A. to zero hour was usually about 10 minutes but regts were usually ready within five minutes.

(iii) In one Div at least fifty divisional concentrations are said to have been fired, and in addition each regt fired between 20 and 40 regimental concentrations during the battle. The experience of the battle confirms the great effect of heavy concentrations of artillery fire. They can only be fired if communications are good, when the command of artillery is not decentralized, and, in desert warfare, when all regts are surveyed in.

4. Command of artillery and the passage of orders

(i) The need to be able to arrange quickly for heavy concentrations of arty fire on to targets of a fleeting nature, and make and get out to the guns fire plans which nearly always involved more than one Div arty was very apparent throughout the battle. The problem is one of command and communications. In 30 Corps during the various phases of the battle the artillery was either centralized under the C.C.R.A., or under Cs.R.A. In attacks involving only one Div the gunner part of the fire plan was made by the C.R.A. concerned, even though an additional Div arty was placed at his disposal. The C.C.R.A. contained command of the bulk of the Corps arty and received details of the fire required from the C.P.A. concerned, and he assisted when necessary by providing additional clerical staff. It is considered that this is the best system.

(ii) In the 30 Corps battle, the whole problem of the control of the arty was exceedingly complicated since both 10 and 30 Corps arty were deployed in the same area facing the salient, which was in the course to become the gap through which 10 Corps would pass and a proportion of the guns of 10 Corps assisted in 30 Corps attacks. Throughout the battle confusion and friction was only avoided by the closest liaison between the two Cs.R.A.s and there is no doubt that in any battle of this type the closest touch is also necessary between a C.C.R.A. and Cs.R.A. When it so happened that Cs.R.A.s were located close together the advantage was at once apparent, and in more than one case it enabled the fire of the bulk of the two Div artys to be concentrated on important targets of a fleeting nature.

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(iii) Command of 30 Corps, and of its Divs, was generally exercised by the Commander from a small Tactical H.Q. well forward. During much of the battle it was essential that the C.C.R.A. and Cs. R.A. should be forward at these H.Q.s but Commanders would not allow them to have their staffs and clerks with them, as to do so would have made the H.Q.s unbuly large. If a fire plan has to be got out at a time when H.Q. R.A. is at the Main H.Q., it is essential for the C.C.R.A. or C.R.A. concerned to rejoin his H.Q. as only by so doing will he have the staff, communications and facilities for producing the detailed orders and tracings which are necessary. This practice was followed by the C.C.R.A. 30 Corps. In the case of one C.R.A. who himself got out a fire plan without an adequate staff from his Div Tac H.Q., great difficulties were encountered, the plan was only ready just in time, and the C.R.A., who became involved in minute details, was physically and mentally exhausted by the process. When a C.C.R.A. is forward away from his own R.A. H.Q. he must have with him a U/T set.

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(iv) The need for liaison officers from regts with R.A. H.Qs and at times from Div Artys with Cs.C.R.A. was most apparent throughout the operations. In many cases, particularly in Arm Divs, it was impossible to bring up wire laying vehicles, or indeed to maintain any wires laid owing to the great congestion of tanks, guns and vehicles in the gap that was being made. Details of fire plans can not normally be sent by wireless and orders could only be sent by liaison officers who had frequently to undertake against time difficult cross country journeys often near partially uncharted minefields, in order to get the orders to regts and btys. The time taken often necessitated simple fire plans, and that fact that no guns failed to get their orders can only be attributed to Cs.C.R.A. and Cs.R.A. insisting on the duties of L.Os being carried out by determined resourceful and highly trained officers. To use inexperienced officers is to risk the complete breakdown of the fire plan.

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5. Counter Battery Fire

(i) All the three med regts available were concentrated in the north under the CCRi 30 Corps. At all times a proportion of the med arty was allotted to C.B. tasks. To control the med arty group and run the C.B. organisation, a C.O. was taken from one of the med regts. To perform the duties of C.C.M.A., and special buried telephone lines were provided. The necessity for such an appointment was obvious during the battle, without such a commander the C.C.R.A. would have been seriously overloaded, and the efficiency of the C.B. measures would have suffered.

(ii) Before the attack the enemy was believed to have in action 200 fd guns, 40 med guns, and 14 heavy guns which could bear on the front of the main attack. It was necessary that the position of these guns should be known, and that nothing should be done which might cause any of them to move at the last moment. Consequently, on the northern part of the front, for over two weeks prior to the attack, a silent C.B. policy was adopted, except for certain destructive shoots against particularly active btys, and neutralisation shoots against moving guns. Whilst many hostile btys were manned by Italians, who are perhaps comparatively easily neutralised, a proportion were manned by Germans. Since it was impossible to neutralise all the enemy guns during the attack, the policy of employing all available artillery on C.B. immediately prior to zero hour was adopted. In 30 Corps during this period, 25 known hostile btys within range were subjected to really heavy concentrations of up to 20 to 1 and in no case of less than 10 to 1, whilst during the attack more normal concentrations were again put down for short periods on selected btys. Some doubt was expressed by inf coms as to the wisdom of C.B. fire immediately before zero hour, but they are now satisfied that it had no evil effects on surprise. Its value lay in the really heavy concentrations that were possible, and it was certainly successful as the enemy arty though active between attacks was practically silent during attacks.

(iii) The main source of information was air photos, which are discussed in para. 6 below. Next in importance comes flash spotting, for which special towers were built. Flash spotting was carried forward and towers moved up throughout the battle. All hostile btys located by flash spotters were immediately bombarded. Apart from its value in giving a good many locations, flash spotting is invaluable at night in showing which hostile btys are active, and its use for this purpose in conjunction with neutralising fire acted as a

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(iv) In spite of the fact that we had a very considerable measure of air superiority, the R.A.F. were not prepared to send out arty/R without the escort of about a sqn of fighters. No arty/R was used during the period of preparation. An arty/R sortie was sent out on three successive days when much of the enemy's arty had been forced to move and many new locations were unknown. Though successful shoots against enemy tanks and M.T. were carried out, no hostile btys were spotted. As these sorties failed to locate enemy guns, and entailed using many fighters defensively

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instead of offensively, and as air photos eventually produced the bulk of the information required, the use of arty/R was discontinued. Arty/R therefore played no useful part in the battle. Had the A.G. sons been equipped with aircraft with a better performance than those of the enemy, such as Mustangs, the situation might have been different.

(v) C.B. shoots included concentrations against enemy A/Tk guns, often easily located from air photos largely because the German usually sites an A/Tk gun, a mortar and a heavy H.G. close together in a group.

(vi) The congestion of guns, tanks and vehicles in the base of the gap can only have escaped heavy casualties because of our great air superiority, and because, probably due to difficulties in bringing forward supplies of am, but also to the effect of our C.B. measures, hostile arty fire was never really heavy. The lessons are that over-congestion can and must be risked when a considerable measure of air superiority has been obtained, but that under such conditions effective C.B. fire is most important.

(vii) Apart from the apparent success of the heavy concentrations immediately prior to the attacks, it is of interest to note that the experience of the battle confirmed the official teaching that C.B. programmes take a long time to work out. One programme, which included concentrations for and arty on to defended localities, took seven hours to compile. It was usually necessary to issue the programme well in advance, and amend it up to the last minute as C.B. information came in.

(viii) It should be noted that in this battle, the enemy arty was most reluctant to leave its well-prepared battle positions, unless forced to do so by the advance of our infantry. The enemy's own C.B. work was poor and few casualties were caused by enemy shelling when our arty was properly under cover. At no time did he put down the concentrated fire of several of his btys on one of ours, his C.B. fire being limited to a few salvos from one bty.

(ix) There is no doubt that our C.B. measures were most successful, and it is considered that they played a large part in the enemy's defeat. No one with experience of this battle now doubts the value of this type of fire, or that the considerable quantity of ammunition used was well expended. C.B. fire based on guess work or inaccurate information is however useless and the results achieved were only obtained after the C.B. organisation had been fully developed and practised, and after much hard and careful work by experienced officers.

6. British versus enemy artillery

There is no doubt that even before the battle, our arty had achieved a moral superiority over the enemy's arty, partly due, no doubt, to the enemy's difficulties of ammunition supply, though he had a practically unlimited supply of 25-pr am in a number of our guns from which to fire it, and he left behind a lot of his own ammunition during his subsequent retreat. The enemy put up flash spotting towers and he destroyed them, he hardly fired at ours, though he had them marked on his maps, even with

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7. Value of air photographs

(i) The value of vertical air photos prior to and throughout the battle was immense. Practically all C.B. locations and the exact whereabouts of enemy defended localities were based on air photos, though in the latter case the information was taken from overprinted maps prepared from photos prior to the battle by an R.F. Photo Survey Section. In a desert of the type in which the battle was fought, oblique photos are of no use to the gunner as it is impossible to correlate the photo with the ground.

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(ii) The technique for obtaining the co-ordinates of hostile btys in the conditions obtaining in the desert, where there is little detail to put on maps is of considerable importance. Before the battle a photo plot had been gradually built up covering the whole battle area. As the photos, taken from time to time, generally by Tac/H, were at various scales, with varying and often excessive tilt, and in the first instance with incomplete overlap, this process took many weeks. Once done, however, it was comparatively simple by comparing the photos taken from day to day during the battle with the original photo plot to fix the co-ordinates of fresh hostile btys seen on new photos. The whole of the technical work involved was carried out by an I.B. Survey Section, located at the (A.C.) Wing H.Q.

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(iii) Though this worked excellently in the recent operations, when ample time for preparation was available, it is clear that in mobile operations in a desert country, suitable aircraft should be made available to take survey photographs, at the correct scale and with the necessary overlap, of any likely battlefield some days before it is reached. The value of such photos in any battle will far outweigh the loss of flying time for which the aircraft are diverted from their normal role.

(iv) The special arrangements that it was found necessary to make some time before the battle in order to obtain C.B. information quickly from new air photos are also of interest. A C.B. section consisting of one trained C.B. officer and two clerks was established at the H.Q. of the R.A.F. Army Co-operation Wing. Here it was in close touch with the A.L.O. and the R.A. Photo Survey Section, and the personnel could do their detailed examination of photos in comparative comfort, including the use of electric light by night. This C. Section had copies of all gridded mosaics, and received all C.B. intelligence reports, H.B. lists and demands for new photos direct from Corps C.B.Os. In conditions of static warfare when telephonic communications were available, the officer having examined a photo could obtain the co-ordination of a new bty and phone the result to the Corps C.B. office. Before the battle the photo printing facilities of the R.A.F. were limited and the time taken between the taking of a photo and its being received by the C.B.O. at Corps was usually about 36 hours. After the battle started the printing facilities were increased and special copies of prints were in the hands of the C.B. section 4 - 5 hrs after the plane had landed. On 1 Nov photos were taken at 1000 hrs and a detailed interpretation together with the co-ordinates of 19 new hostile bty positions were received by the Corps by 2200 hrs, i.e. 12 hrs later. Before these special arrangements were made, prints reached the Corps C.B.Os. two or three days out of date.

6. Medium Artillery

(i) Much more medium artillery could profitably have been used, not only because its range is greater than that of field artillery, but because its neutralising effect is far better. As resources were limited to three regts, they were all used in support of the main attack in the north. Of the three medium regts, two were mixed regts each of one bty of 4.5s and one of 5.5s and the third was entirely 4.5s. The effect of the much greater shell power of the 5.5 is appreciated, but with no heavy artillery available the extra range of the 4.5 was found to be invaluable, as they

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(ii) In the first attack, C.B. fire was kept up after the normal fire plan was finished and the med arty programme lasted for 5 1/2 hrs, but the guns were firing more or less continually for 20 hrs, and the ammunition expenditure during the first 24 hrs was over 300 r.p.g. To avoid exhaustion detachments were made up with drivers before the battle started to 12 or 13 men. Generally detachments were never exhausted, though they suffered considerably from lack of sleep. On the fourth night in particular lack of sleep was really felt, and the men slept in relays within 10 yds of guns firing, and even enemy bombing failed to wake them.

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(iii) Experience prior to this battle has always shown that med arty are a favourite target for enemy Stukas. In consequence troops of med arty are always deployed in a diamond or square formation with guns from 100 to 150 yds apart. When so deployed the troop is no longer a worth while target. This dispersion makes the maintenance and supply of Tannays very important.

(iv) Med guns lose muzzle velocity quickly, and as a result of the experience gained, it is considered that they should be calibrated before every battle, and every third day during battle.

(v) After the first night of the battle, the average number of guns per bty in action was seven 4.5" and five 5.5". The chief cause of guns firing out of action was the need to adjust the packings in buffers.

9. Anti-Tank Artillery

(i) In spite of the number of A/Tk guns now available within the divs there were several demands for reinforcements of A/Tk artillery, but this was only necessary because of the long flanks of the gap which had to be protected in addition to the front, during periods of reorganisation. The enemy made several counter attacks with tanks, and a certain number of guns were temporarily lost through being overrun. In the case of one Bn this was due to running out of ammunition, which is thought to be due to the A/Tk guns being fired in moonlight, which is bound to be expensive in ammunition, and to opening fire at too long ranges. In other cases the cause is not yet known, but there is no evidence to suggest that it is due to the inability of the 6-pr, properly sited, to knock out any enemy tank. The 6-pr is a most effective weapon. A case occurred where a 6-pr firing at a range of 150 yds knocked out two German Mk III tanks, halted side by side with one round. The need to get A/Tk guns forward in attack was illustrated by a reverse to the Fighting French, who were easily driven back after a successful advance by a few light tanks, as largely owing to the difficult nature of the ground, they had failed to get their A/Tk guns forward.

(ii) In the phase of the battle under review, the battlefield was not dominated by the tanks of either side, and both we and the enemy lost many tanks with no gain in ground, or without inflicting material casualties on unarmoured troops. It would seem that the anti-tank gun properly used in adequate numbers, unless neutralized by artillery fire, is the master of the tank, which is very reluctant to advance in face of its fire.

(iii) Great difficulty was experienced in the co-ordination of the siting of A/Tk guns. Infantry A/Tk guns are usually deployed on a Coy or Platoon basis, and considerable readjustment is necessary after deployment. There is however within the inf bde, no special co-ordinating authority to do this, and no one officer with whom the C.O. of the anti-tank regt can deal. The task of the A/Tk regt commander may thus become impossible, and the best layout was seldom obtained. In one armoured div it was found necessary to attach to the Lorried Inf Bde a senior R.A. officer whose duty was to co-ordinate the inf A/Tk guns. Possibly an officer with these duties should be appointed to all inf bde H.Q.s. He

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10. Measures to deal with enemy anti-tank guns

The problem of dealing with the enemy anti-tank guns met with varying success during the battle. In cases where the guns had been in action for some time and had been located on air photos, they were generally successfully neutralised by counter battery concentrations. As the enemy's position was being gradually penetrated, the enemy was very quick in building up in front of our penetration new anti-tank gun screens, and these guns, whose presence only became known when our tanks moved forward, checked their further advance. There was then a tendency for the armour to expect the gunner to destroy these guns. This was generally a difficult and often impossible task, as the ground never gave enough

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command to allow of their accurate location, and it was only when enemy guns were ill concealed that they were destroyed or in some cases forced to withdraw by observed fire. In the infantry attacks, some A/Tk guns were hit by the barrage or concentrations, and all guns were invariably overrun by the infantry without difficulty. General von Thoma, Commander of the Afrika Korps, stated after he had been captured that he attributed his defeat more than anything else to the destruction of over 50 of his A/Tk guns by our Arty fire. On few if any occasions did armoured divs attempt to advance under a pre-arranged fire plan, such as those which were so successful in the purely infantry attacks, nor was smoke asked for or used. It would seem that if armoured divs are to act as more than weapons of pursuit, and are to get forward in face of even hastily organised and weak A/Tk gun opposition, that they must study the use of smoke and pre-arranged fire plans consisting of heavy concentrations of arty fire, designed to neutralise the enemy detachments whilst the tanks either alone or in co-operation with the infantry or armoured divs move forward to positions from which they can themselves neutralise the detachments with M.G. fire prior to and whilst closing with the guns.

11. Anti-aircraft Artillery

(i) The handling of divisional Lt A.A. Arty is peculiar in a featureless desert in that btys are normally sited to protect definite units or formations, rather than as in a European theatre of war to protect defiles through which many units or formations may be passing. In the pursuit, which occurred after the battle, this custom led to a reluctance on the part of subordinate formations to leave that they regarded as their own A.A. to protect the Sollum Pass, which was in continued use and required continuous protection.

(ii) Heavy A.A. was retained under the command of Army. During the battle a bty was profitably sited well forward in the battle area, and brought down several enemy aircraft.

(iii) The presence in the forward area of several Lt A.A. btys recently arrived from home with little experience drew attention to the need for the strictest discipline in the control of A.A. fire. There was a tendency for before guns to waste ammunition on aircraft well out of range and even to fire at our own aircraft, and it was noticeable that both these habits are most infectious.

(iv) Within 30 Corps, the control of A.A. arty was centralised under the C.C.R.A., and an A.A. staff officer was appointed for the period of the battle, by taking an officer from an A.A. regt. He was found useful, but the need for such an officer permanently on a C.C.R.A.'s staff in this theatre of war cannot be judged from the experience of this battle which was initially of a static nature and passed suddenly to a phase of extreme mobility when decentralisation of A.A. resources to dive became essential.

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12. Survey

(i) The value of accurate survey in this battle can hardly be overstressed. It was essential to success. Not only did the success of our C.B. measures depend on it, but in the type of country where there are few easily recognised features, it is often exceedingly difficult if not impossible to identify on the ground known enemy localities for the purpose of registration, or to locate on the map localities seen by ground observation. Apart from photos of actual defences, features which can be seen can however be roughly fixed by shooting, always provided that the bty concerned is on the permanent grid. The only rule was for all btys to be on the permanent grid at the earliest possible moment, particularly as only then are photos of real value.

(ii) There were several acute differences of opinion when different formations differed by distances of well over 1,000 yds in their estimate of where their leading troops, infantry or armour, were located. Units claimed to have captured an objective when they were still over 1,000 yds short of it. There were only two certain methods of deciding where

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troops were. Either by shooting on to an adjacent feature and deducing the co-ordinates, or by the troop concerned firing at dusk two or three flares which were resected by the flash spotters. The accuracy and finality of these methods is not yet generally recognised by the other arms.

13. Air Burst Fuzes

A reasonable number of 210 fuzes were available. These fuzes were supplied for air burst ranging and for this purpose they were invaluable, both during and prior to the battle. Air burst ranging was found to be the best answer to the problem of bringing accurate fire to bear on hostile blys whose exact co-ordinates have been obtained from air photos.

Some of these fuzes were however used for their man killing effect with H.E. against known 88 mm A/Tk guns, and important entrenched localities known to be strongly held which were to be attacked. In such localities, after the attack, dead were found at the bottom of slit trenches, who it is considered can only have been killed by air burst H.E. The American S.P. 105 mm with which one regt is equipped, is provided with a proportion of time fuzes, and air burst H.E. was used against A/Tk gun detachments, and in the opinion of observing officers, its neutralising effect was far quicker and more effective than that of H.E. burst on the ground. There is no doubt that H.E. burst in the air is exceedingly effective, and there is unquestionably a need for a time fuze to be made available for all types of gun in considerable quantities.

14. Ammunition Expenditure

For any major attack no restriction was placed on ammunition expenditure, and except for the initial attack when ample time for preparation was available, the limiting factor was the ability of 2nd line and unit transport to dump what was required. The divs on the front of the main attack were never limited in amm, but after the first two days divs on the southern and central parts of the front in both Corps were limited to 40 r.p.g. per day.

The number of 25-prs in action during the battle was 834. The total number of 25-pr rounds fired in the army during the 12 days 23/24 Oct to 4/5 Nov was over one million rounds. The average expenditure of 25-pr amm was 102 r.p.g. per day over the period of 12 days. Further details in r.p.g. are given in Appendix 1. The med arty fired an average of 133 r.p.g. per day 4.5" and 157 r.p.g. per day 5.5" during the period. Exact figures are not at present available for expenditure of .75" Tk amm but it is thought to have been in the nature of 2 r.p.g. per day 6-pr and 1 r.p.g. 2-pr in the Northern sector. Many .75" Tk guns did not fire. Bofors expenditure within divs, which was often excessive owing to regts recently arrived from home firing at aircraft out of range, is thought to have been about 14 r.p.g. per day.

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Eighth Army.

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Formation	: No. of guns : at start of : battle before : regrouping	: 25-pr ammunition expenditure in rounds per gun													: Total : expenditure : in r.p.g.
		: Oct									: Nov				
		: 24	: 25	: 26	: 27	: 28	: 29	: 30	: 31	: 1	: 2	: 3	: 4		
10 Corps	: 192	: 28	: 49	: 33	: 80	: 106	: 49	: 95	: 137	: 34	: 309	: 38	: 85	: 1043	
13 Corps	: 288	: 190	: 71	: 71	: 30	: 10	: 24	: 25	: 18	: 47	: 28	: 37	: 27	: 578	
30 Corps	: 354	: 577	: 64	: 84	: 103	: 58	: 159	: 48	: 209	: 90	: 314	: 80	: 123	: 1909	
Total 8 Army in r.p.g. per day	: 834	: 317	: 63	: 68	: 73	: 52	: 86	: 51	: 120	: 59	: 208	: 54	: 80	: -	
Total r.p.g. during period		: 317	: 380	: 448	: 521	: 573	: 659	: 710	: 830	: 889	: 1097	: 1151	: 1231	: 1231	
Average expendi- ture per day over period		: 317	: 190	: 149	: 130	: 115	: 110	: 101	: 104	: 99	: 110	: 105	: 102	: -	

- Notes:
1. The above figures are approximately correct.
 2. The figures can not be cross checked, as Regts were moved between Corps, and the total no guns in each Corps varied.
 3. The above figures do not agree exactly with 'Q' figures for ammunition issued, as before Corps and Divs had accumulated small "private" dumps, which were expended during the first

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APPENDIX 1.

25-pr ammunition expenditure in rounds per gun												:	Total	:	Average daily
Oct							:	Nov				:	expenditure	:	expenditure
25	26	27	28	29	30	31	:	1	2	3	4	:	in r.p.g.	:	in r.p.g.
49	33	80	106	49	95	137	:	34	309	38	85	:	1043	:	87
71	71	30	10	24	25	18	:	47	28	37	27	:	578	:	48
64	84	103	58	159	48	209	:	90	314	80	123	:	1909	:	159
63	68	73	52	86	51	120	:	59	208	54	80	:	-	:	-
380	448	521	573	659	710	830	:	889	1097	1151	1231	:	1231	:	-
190	149	130	115	110	101	104	:	99	110	105	102	:	-	:	102

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