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Arthur T. Harris

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# Report on the Bombing of Our Own Troops during Operation “Tractable” – 14 August 1944

**Arthur T. Harris**

**Air Chief Marshal, Commanding-in-Chief, Bomber Command**

*Editor’s note: Operation “Tractable” was the second major Canadian operation in Normandy designed to break through the German defensive perimeter to reach Falaise. Like its predecessor, Operation “Totalize,” “Tractable” was to employ heavy bombers to augment the firepower available to the troops. The use of heavy bombers in a tactical role was a relatively new tasking for the strategic force and required precise targeting to destroy and disrupt the enemy positions. The strategic bomber force, British and American, had made significant contributions to the land battle in Normandy, but there had been mistakes, most notably during Operation “Cobra” when the American 8th Air Force had twice bombed their own troops on 24-25 July causing 136 deaths and an additional 621 casualties. For Operation “Tractable,” the medium bombers of 2 Group, 2nd Tactical Air Force were to bomb German gun, mortar and tank positions along the startline immediately prior to H-Hour. This was to be followed by a large attack by Bomber Command against German positions on the right flank of the Canadian attack, timed to commence two hours after the start of the advance. This bombing was intended “to destroy or neutralize enemy guns, harbours, and defended localities on the right flank and to prevent any enemy movement from this area to the area of the attack.” (First Canadian Army Op Instruction No.14, August 1944). Though the air support was largely a success, a number of aircraft mistakenly bombed short hitting units of First Canadian Army. In total, over 150 Allied soldiers were killed and 241 wounded by the short bombing. Though it had little impact on the outcome of “Tractable,” there were a number of investigations launched to understand why the short bombing occurred. The report which follows, dated 25 August 1944 and written by Air Chief Marshal Arthur Harris, Air Officer Commanding-in-Chief of Bomber Command, contains the official RAF post-mortem on the reasons for the accidental bombing of First Canadian Army.*

I have studied the facts of the bombing errors which occurred on the 14th August 1944 in connection with Operation “TRACTABLE” during which some of a large force of Bomber Command dropped bombs in error on our own troops. I have the following comments to make.

Previous operations of this type had been outstanding successes. The Army has paid generous tribute to their effect on the enemy in enabling our own troops to advance, in addition to saving our troops the much greater casualties that would inevitably have occurred without this type of support. The support attack in which

this accident occurred was otherwise an outstanding success. Photographs subsequently obtained show that each of the aiming points was subjected to a very accurate and heavy concentration of bombing which undoubtedly had the effect sought in enabling the First Canadian Army to advance with comparatively light losses against enemy positions which had previously proved intractable.

In order to obtain a full and clear picture of the circumstances leading up to and occasioning this accident it is necessary to stress certain points both in regard to the actual occurrence



The photographs on this page and the next were taken during the heavy bombing in support of the army during Operation "Charnwood," 7 July 1944. This photo gives a good idea of the number of aircraft that would be in the air over the target during the attack (467 aircraft for "Charnwood"; 811 aircraft for "Tractable").

itself and in regard to this type of operation as a whole.

The heavy bomber force is trained primarily to operate in darkness. It is not trained to fly in formation. In darkness the aircraft operate individually according to an overall plan, navigating by prescribed routes to the neighbourhood of their objective and bombing, under conditions in which no details of the ground can generally be seen, on pyrotechnic markers of varying types suited to the particular occasion and placed on or near the objective by pathfinder aircraft. Subsequent corrections are made on the instructions of Master Bombers.

The entire force is trained to these methods and to these only. This training and the organisation which produces it cannot be changed at a moment's notice, or indeed at many months' notice, to enable the force to operate with 100% efficiency in so entirely different a role as close direct support to troops on the ground in daylight.

With these facts in view, when urgent demands began to arrive from the Army for assistance by the heavy bomber force, it was invariably pointed out that we would do our best within the limits of our experience and training to meet their requirements but that grave risk

inevitably existed in these circumstances of some bombing going astray and taking effect upon our own troops. Nevertheless previous operations on which this type of bombing had been employed at short notice had been so successful that the Army authorities concerned expressed ready acceptance of the risk in exchange for the proved decisive effects of such bombing in forwarding their military plans. They therefore entered this venture, as did Bomber Command, in full knowledge of the risks occasioned to our own troops.

To enable those outside Bomber Command to get a balanced view it is necessary to enlarge somewhat on the crew training and organisation

in Bomber Command. As stated above this training is for work entirely different from this type of close support bombing. There is no possibility of changing or expanding that training within a reasonable period, even if it is necessary, in order to provide this type of close support to the troops on the ground.

The pilot in a heavy bomber has a very limited view of the ground. Such as he has, he is unable to take advantage of in an operation of this description because the whole of his time and attention is taken up in listening to his navigator's and air bomber's corrections while controlling his aircraft, keeping on the correct course, and avoiding collisions in the high

A Halifax of Bomber Command attacks the northern suburbs of Caen during Operation "Charnwood," 7 July 1944. The amount of smoke and dust which obscured the target area once the bombing commenced is readily apparent.



concentration of aircraft which the methods of bombing and considerations of enemy opposition make essential.

The navigator also has virtually no view of the ground. He is a machine-minder and plotter who spends most of his time in a cabin utilising the data provided by the various mechanical aids to navigation, in conjunction with dead reckoning, to determine the position of the

Incidents such as those which occurred on this occasion must therefore be regarded in the light of the above explanation of the abilities, training and functions of the various members of the crew together with the limitations imposed upon the Captain and the navigator by the structure of the aircraft, by the conditions in which they work, and by their inability to know what is actually going on underneath them or precisely what the bomb aimer is seeing or doing.

The details of the planned bombing during Operation "Tractable" are as follows. A total of 811 aircraft were despatched against seven enemy concentrations, all within 2000 yards of the Canadians striking towards Falaise:—

Quesnay (AP [Aiming Point] 21"A") – 118 aircraft attacked with 552.8 tons HE and 8.1 tons IB.

Quesnay (AP 21"B") – 102 aircraft attacked with 552.4 tons HE and 6.3 tons IB.

Bons Tassilly (AP 23) – 108 aircraft attacked with 427.7 tons HE and 6.3 tons IB.

Saumont St. Quentin (AP 22) – 110 aircraft attacked with 391.3 tons HE and 6.7 tons IB.

Aisy/Potigny (AP 28) – 127 aircraft attacked with 588.8 tons HE and 7.6 tons IB.

Fontaine le Pin (AP 25) – 112 aircraft attacked with 554.2 tons HE and 7.2 tons IB.

Potigny/Aisy/Ussy Road Junction (AP 24) – 105 aircraft attacked with 560.0 tons HE and 6.7 tons IB.

Total Bomb Tonnage – 3,627.2 tons HE and 48.9 tons IB.

25 sorties out of the 811 were abortive.

3 aircraft were lost.

[HE = high explosive; IB = incendiary bomb]

aircraft from minute to minute and to decide any alteration of course and speed which may be necessary to take the aircraft through to the neighbourhood of the objective on the correct route and bearing at the correct time.

The air bomber alone can undertake direction of the aircraft by means of map reading with reference to the ground beneath. His training in this difficult art is extremely limited, partly because there is not sufficient time during his training to devote much effort to this particular type of exercise, but mainly because, the metier of the force being night bombing, locating position by map reading from objects on the ground is normally quite impossible.

Furthermore air bombers as a whole are by no means of outstanding intelligence. They are in the main selected as such because, although passing other standards for aircrew, they are the least likely to make efficient pilots or navigators.

The whole of the above must be further considered in relation to the limitations of experience of the crews. The casualty rate among heavy bomber crews is exceedingly high. Their tours are therefore short. Once their training is completed and they commence to operate they do not stay very long, even if they survive on operations. The amount of actual experience accumulated by any individual crew is therefore necessarily very limited. The majority of the force is consequently, at any given moment, largely composed of new crews.

The circumstances of war being what they are operations such as the one under discussion are inevitably laid on ad hoc at the shortest possible notice, never allowing adequate time for any practice or even for extended discussion and instruction.

On this occasion details of the operation were brought over to this Headquarters late on the

evening of the 13th. On studying the proposals it became at once clear to me that the necessity to bomb the targets in succession from north to south in order to meet time table essentials postulated by the Army was inviting a dangerous situation if the wind, as predicted (and as it turned out to be) was northerly. It was obvious that in that situation unless the wind strengthened considerably more than could be expected there would be a tendency for smoke from the initial targets to obscure the remainder and for smoke and smoke screens from enemy shelling and from our own troops prior to the bombing to obscure the entire area. That in fact occurred to a considerable degree. But this risk was accepted at the particular insistence of the Army and in my view the acceptance of this risk was reasonable in the battle conditions prevailing and in view of the results required and known by previous experience to be obtainable from this type of bombing.

In the light of all the limitations mentioned above it was at once apparent that the risk of bombing our own troops existed in a serious degree. It was carefully considered whether by routing the aircraft over the enemy lines entirely the risk would in any way be lessened. This would however have meant subjecting our aircraft to enemy anti-aircraft opposition throughout their flight over the continent in a very heavily defended area. I was not prepared to subject my crews to this additional risk in order solely to lessen the risk of bombing our own troops. Their casualty rate is and always has been far in advance of anything suffered anywhere by our ground troops. Furthermore such an approach over enemy territory would still not have entirely eliminated the risk because the bombing was to take place within an enemy salient extending deep into our lines. Whereas the best check against bombing our troops was a carefully timed run from the coast line to the target area at a known speed this type of check would have been further complicated if the run in instead of being straight from the coast over our own troops had been brought in over enemy territory at an angle with a dog leg into the salient. Furthermore there was as much risk that aircraft might err to either side of their course when coming into the salient from the east and thereby stray over our own troops as there was that by coming in straight over our own troops they might drop short or even cross the salient

altogether and hit our troops on the far side. I therefore decided on the straight run in over our own troops.

On a previous occasion, which in the outcome produced a highly satisfactory series of attacks, I had been asked at a few hours notice to stage close support bombing of our troops in the dark. Knowing the limitations of the force I was originally horrified at this proposal. But a solution having to be found or the entire army plan wrecked at the last moment, the problem was solved by having our own artillery fire coloured marker shells on to the aiming points. These points were then re-marked in a clearer manner understandable to our air bombers by the pathfinder aircraft with their special pyrotechnics. I considered whether this would be possible on this occasion. But as this attack was to be brought off in daylight I was advised that the coloured artillery shells would be unlikely to show up. There was no time to test this out. It was doubtful whether stocks of coloured shells were available and there was no time to find out. I therefore had to discard a possible safeguard which, however, held within it serious possibilities of even further confusing the issue.

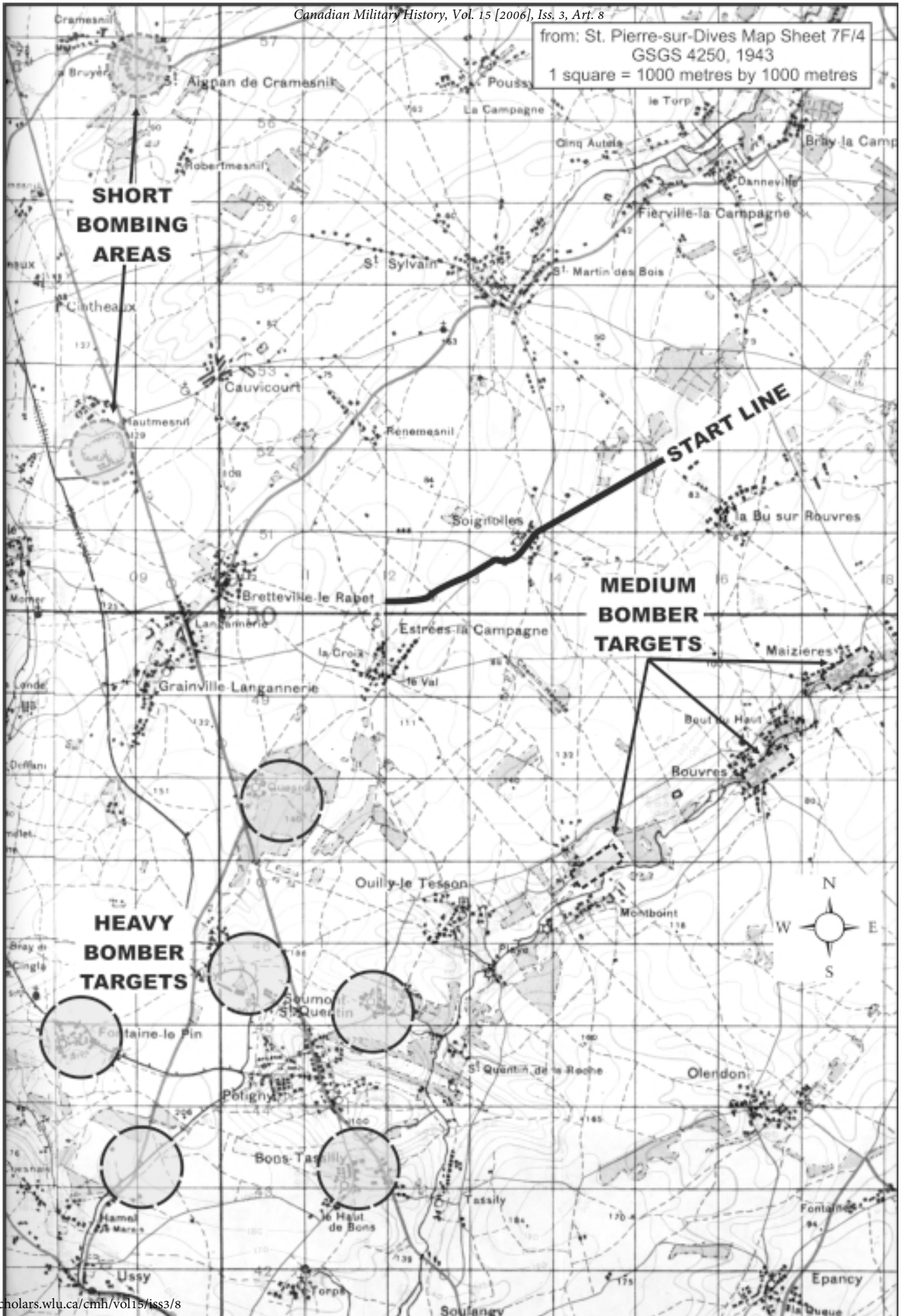
The mistakes made on this occasion (although as I have remarked, apart from these mistakes the operation was otherwise an outstanding success) were as follows:-

Phase 1 - From 1441 to 1459 hours one Pathfinder, 4 crews of No.4 Group and 9 crews of No.6 (RCAF) Group bombed mistakenly near St. Aignan within our own lines. The pathfinder was a "non-marker" aircraft and it has been clearly established that no markers fell in that vicinity.

I can see no valid excuse for these bombing errors; not even for the errors of aircraft which followed on behind those initiating the mistake. Attention by the navigators and Captains concerned to the timing of their run from the point where they crossed the coast inland would have at once shown them that they were bombing short by many seconds.

Phase 2 - From 1514 to 1518 hours, 12 additional aircraft of No. 6 (RCAF) Group and 1 Pathfinder aircraft bombed in error in the same

from: St. Pierre-sur-Dives Map Sheet 7F/4  
GSGS 4250, 1943  
1 square = 1000 metres by 1000 metres







he claimed to have been yellow markers. This target was bombed by a total of 26 aircraft of No.1 Group.

Here again attention to the lapsed time since crossing the coast line would have prevented this error.

The analysis of aircraft in error is as follows:

	1 Group	4 Group	6 (RCAF) Group	8 (PFF) Group	Total
St. Aignan – 1st Phase	-	4	9	1	14
St. Aignan – 2nd Phase	1	-	12	1	14
Haut Mensil Quarry– 3rd Phase	-	-	23	-	23
Haut Mensil Quarry – 4th Phase	26	-	-	-	26
<b>Total</b>	<b>27</b>	<b>4</b>	<b>44</b>	<b>2</b>	<b>77</b>

In the meantime all aiming points were otherwise being very accurately and heavily attacked by the great majority of the force.

I have referred above to claims by many crews that they were misled by what looked like coloured target indicators on the ground and in the air.

As I have remarked, I consider that in spite of these misleading factors (which are explained hereafter) these errors were inexcusable had the Captains seen to it that their navigators and bomb aimers paid proper attention to the timed run from the coast line. This timed run they too lightheartedly abandoned, some because they thought they saw target indicators – sooner than they could have been expected on a timed run – others because they merely followed sheeplike the errors of their predecessors.

On hearing of these apparently misplaced target indicators and after investigation realising that they could not have been from our own pathfinder aircraft, I sent an officer over to France to investigate. He reports as follows:-

On August 20th, 1944, I reported to Headquarters No. 84 Group which Headquarters is alongside that of the 1st Canadian Army. I saw S.A.S.O. and Group Captain Ops. and explained to them the sequence of events as they had so far transpired, which led up to the incorrect bombing on August 14<sup>th</sup>. In particular I raised the matter of the alleged yellow lights which had been seen on the ground both in the St. Aignan and Quarry areas. I was immediately told that yellow smoke, flares and celanese strips were

the standard signals for troops of all allied armies in France to indicate their positions to our own aircraft. I was shown a copy of 1st Canadian Army Operations Standing Orders from which the following is an extract.

“SECTION 8 GROUND/AIR CONVENTIONS

Para. 8. – Recognition signals displayed by forward troops will be either or both of the following:

- (a) Yellow and/or orange smoke and/or yellow flares
- (b) Yellow celanese triangles sewn together in strips of 10".

Para 10. – Forward troops will display recognition signals as in para. 8 above if attacked by friendly aircraft.”

I pointed out that crews claimed to have seen yellow lights looking like target markers before any bombs fell in the areas occupied by our own troops, and asked, therefore, whether these yellow flares and smoke would only be fired by troops after they had actually been attacked by friendly aircraft. I was informed that owing to there having been numerous minor incidents involving the attack of friendly troops by our own tactical aircraft, it was quite common for these signals to be displayed if the troops imagined they were going to be attacked. I was also told by Officers, both Army and Air Force, who were amongst the troops bombed on that occasion, that the fact that the aircraft were seen approaching with their bomb doors open, made them feel nervous that they were going to be bombed. I could get no direct evidence that yellow flares were alight on the ground prior to the first bomb falling behind our own lines, but it would appear most probable that they were.

The manner in which these yellow flares, smoke and strips are laid in such circumstances is in the form of a cluster, and thus they resemble the pattern of target indicators on the ground.

No information had been given to this Command to the effect that this system of marking was in use and in fact my Senior Air Staff Officer, who had in the very short time available hurriedly arranged this operation with the First Canadian Army in France the previous

LCMSDS Air Photograph Collection 321/4182



Before and after photographs of Quesnay and Quesnay Wood. The top photo was taken on 26 July 1944 while the bottom photo was taken shortly after the attack of 14 August 1944.

Canadian Forces Joint Imagery Centre (CFJIC) PMR 83-484



day, had particularly sought information on the subject of possibly confusing pyrotechnics and been assured that none would be used. To that extent therefore, the First Canadian Army themselves subscribed to the errors which were made. Furthermore, AEAF [Allied Expeditionary Air Force] and/or 1st Canadian Army should have informed this Command of the common use of these pyrotechnics.

A sensational story was subsequently permitted to appear in the press, from war correspondents presumably controlled by the Army and Air Authorities in France, to the effect that wholesale disaster was only averted by the intervention of some Army-controlled Auster aircraft which fired red Verey lights over an area or areas where bombing was being carried out in error and thus prevented the entire bomber force from committing the same mistake. My comment on this is that in the first place the rest of the bombing was under way, firmly controlled by the Master Bombers and achieving excellent results on the correct aiming points. In the second place red Verey lights fired into

smoke or seen through smoke burning on the ground are likely to and did in fact, give a misleading imitation of target indicators. However well intentioned, therefore, these Auster aircraft succeeded only in making confusion worse confounded. As to how the sensational account of their intervention, including the names of the Auster pilots, was allowed to get into the press is a matter which the Air and Army authorities concerned will no doubt investigate. I will only comment thereon to the effect that of the thousands of Royal Air Force aircraft which have been fired on by our own defences and by our troops, and in a very large number of cases brought down and destroyed, I do not recall one instance of the RAF authorities permitting such facts to be known outside the Service circles necessarily concerned in investigating such incidents for the purpose of preventing, if possible, a recurrence. I regard the emanation of these sensational and untrue accounts through officially controlled channels as deplorable. As the names of the Auster pilots concerned were also made public the responsibility is not only that of correspondents and censors.

Petrol dumps and ammunition set ablaze by short bombing in the 4th Canadian Armoured Division sector near St. Aignan-de-Cramesnil, 14 August 1944.



To sum up – These errors were caused by:

The emergency ad hoc use at short notice, of the heavy bomber force on a type of task for which it is not trained, in full knowledge of the risks involved, as of the gains to be secured. In my opinion this has been completely justified by the decisive successes achieved.

The inherent limitations of the structure of the aircraft whereby the bomb aimer, unused to and not well trained or suited to the task, is the only individual in the crew with an uninterrupted and adequate view of the ground for pilotage by map reading when nearing the target.

The use of coloured pyrotechnics on the ground by the troops without this Command being informed and indeed after this Command's representative had been assured that nothing of the sort would be used. These pyrotechnics fortuitously imitated yellow target marker flares.

The use of Red Verey lights by Auster aircraft in a mistaken effort to stop bombing already initiated on incorrect targets. These red lights seen cascading and burning on the ground through smoke emulated red target markers and in some cases confirmed the bomber crews' view that they were on the correct target.

The necessity, postulated by the Army Authorities concerned, of bombing the targets in the reverse order to that made desirable by the wind direction.

The light wind which caused battle smoke and bomb smoke to hang about the whole area and obscure detail.

The over ready relinquishment of the timed run check from the coastline by the Captains and Navigators implicated. Although this type of operation and navigational check in daylight is not normally used by crews on the tasks for which they are trained and to which they are accustomed, there is no-excuse for their laxity in that connection on this occasion.

A sheep-like following on of some crews misled by those preceding them.

Finally, I would add that no blame attaches to the Master Bombers. They carried out a most difficult and delicate task at short notice with

the greatest efficiency and success, in which they were supported by the great majority of the Bomber Force.

I am satisfied that the crews were properly briefed and indeed, in the case of No. 6 (RCAF) Group, who were the most in error, that the Air Officer Commanding No.6 (RCAF) Group [Air Vice-Marshal C.M. McEwen] went out of his way by special briefing and the provision of stop watches etc. to ensure that the time check was properly emphasised.

But as I have said, I regard the errors of the few who erred as being in this particular case inexcusable solely on the grounds that no matter what misleading conditions and indications existed any adequate effort to maintain the check on a timed run from the coast line to the target area could and would have prevented those errors.

In any future close support operations of this description I regard the following as essential safeguards. The necessary instructions are being issued accordingly:–

1. Wind direction and smoke drift must be the over-riding consideration in the planning of all close support operations, as this Command has always maintained. It must be given priority over military or other tactical requirements unless the Army adamantly insist otherwise and appreciate that the risk of bombing our own troops, although fully known to them, is acceptable; as indeed it was stated to be in this case in view of the military advantages sought.

2. Timed run procedure is to be adhered to by all crews and the Captain is to be responsible for this procedure being strictly applied.

3. A master switch is to be installed forthwith on the navigator's panel with which he can prevent bombs being released by the bomb aimer before the expiry of the timed run, the timing of which is the responsibility of the navigator. This, inter alia, should preclude any repetition of bombing short by mistakenly applying the Master Bomber's broadcast instruction on the real target to any other area where conditions as in this case are fortuitously simulated.

4. On all such close support operations, Captains, air bombers and navigators must carry large scale maps or photographs to enable them, if the conditions of smoke and visibility permit, to make a final personal check as to the correctness of the aiming point.

5. To safeguard against faulty release of bombs when the bomb doors are opened (which happens occasionally for technical reasons and which would be likely to mislead other crews who see such bombs burst beneath them) bomb doors are to be opened either prior to crossing the coast or at least 20 miles from the release point over open areas.

6. The troops concerned must be given orders to use no pyrotechnics likely to be confused as target markers and an acknowledgment that this has been done sent to Bomber Command prior to the operation.

7. Extra Master Bombers with "cancellation pyrotechnics" must shepherd the route wherever it lies over our own troops – as soon as suitable pyrotechnics can be devised.

[signed]  
Arthur T. Harris  
Air Chief Marshal  
Commanding-in-Chief  
Bomber Command

25 August 1944

Distribution:  
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Air Commander-in-Chief, Allied Expeditionary Air Force  
Air Marshal Commanding, 2nd Tactical Air Force

Information copies to: Air Ministry Vice Chief of the Air Staff  
AOC-in-C RCAF HQ Overseas  
GOC-in-C 1st Canadian Army

With regards to the attached report. After consultation with the Air Officers Commanding concerned I have taken the following action.

2. The two Pathfinder Force crews have relinquished their Pathfinder badges and the acting ranks consequent upon Pathfinder employ. They have been reposted to ordinary crew duties.

3. Squadron and Flight Commanders personally implicated have relinquished their Commands and subsequent acting rank. They have been reposted for ordinary crew duty.

4. All crews implicated have been "starred" as not to be employed within thirty miles forward of the bomb line until reassessed by the AOsC after further experience on targets outside the operational area of our own troops.

5. I would ask that suitable action be taken with regard to the failure to warn this Command of the yellow flares commonly in use to mark our own troops; with regard to the mistaken action of the Auster pilots; and with regard to the deplorable and largely untrue Press stories permitted to emanate through RAF and Army controlled sources in France.

[signed]  
Arthur T. Harris  
Air Chief Marshal  
Commanding-in-Chief  
Bomber Command

25 August 1944