JOINT LOGISTICS PLANS COMMITTEE

COMPARATIVE LOGISTICAL EFFICIENCY OF BOMBING TYPE AIRPLANES

Note by the Secretaries

The enclosed study, prepared by the Joint Logistics Plans Committee, is intended to point out the type of bomber aircraft which is cheapest to support logistically in relation to quantity of bombs dropped. Neither the tactical nor strategic missions have been considered. It is intended that sufficient data will be made available hereby to assist in making strategic decisions when the weight of bombs necessary for an operation has been or will be limited by availability of shipping.

R.B. Klemann,
H.F. Wright,
Joint Secretariat.
ENCLOSURE

COMPARATIVE LOGISTICAL EFFICIENCY OF BOMBING TYPE AIRPLANES

Report by the Joint Logistics Plans Committee

THE PROBLEM

1. To determine the comparative efficiency of the several major bombing types of airplanes from the standpoint of logistic support.

FACTS BEARING ON THE PROBLEM AND DISCUSSION

2. Chart, Appendix "A" (page 5) is a summary of performance data which is intended to show the comparative logistical efficiency of the most commonly used types of bomber airplanes. It also shows the comparative cost in time of construction of the airfields suitable for a particular type of airplane. The cost of construction is charged against the first year of operation of the airfield only.

3. Chart, Appendix "B" (page 6) shows the quantity of bombs dropped by the end of each of the first twelve months after beginning of construction. This is intended to show the comparative rapidity with which certain types of bomber airplanes can begin from "scratch" and start operating.

4. Appendix "C" (page 7) is a summary showing the amount of ammunition and bombs dropped, and the tonnage of maintenance supplies consumed to support the bombing operation. The ammunition, which operational experience indicates will be expended on each sortie, was added to the bomb load of the airplane. The tonnage in support of the operation consists of maintenance supplies for the service troops
and combat troops, construction material consumed in completing the airfields during operations, and the fuel consumed on missions. It does not consider reserve buildup.

This Appendix further shows savings in Liberty ships by using one B-29 Gp instead of each other type considered in the study. Inasmuch as this study considered individual groups the actual savings in cargo lift may be determined by multiplying by the actual number of other types displaced. For example if B-29's were used instead of the 9 HB Gps scheduled for the Pacific, a saving of 58 Liberty shiploads per year and 72 T-2 tankers would accrue. Percentages computed on the cumulative monthly totals of bombs dropped to total shipments are shown in the Annex to the Appendix (page 8).

5. a. Chart, Appendix "D" (page 9) shows the maximum range of each type aircraft with its maximum bombload. This load is diminished to the point of no bombload at the maximum range. Although the ratio of bombload to range at times indicates a direct relationship, in actual practice this will not be so because some gastanks required to extend the range take up space otherwise allotted to bombs. The critical points of change have been indicated on the chart.

b. It should be noted that the portion of this study relating to range has not been made at all power settings. A setting was selected, "Maximum Cruising Range" which is covered in the document, "Characteristics and Performance Chart EE 393 ATSC, Wright Field, Ohio". It will also be noted that the range used for B-29's is less than the ranges being covered by B-29's in actual practice. This can be accounted for by the fact that the range selected is not that obtained from the most efficient throttle setting, "Maximum Long Range-Power", but is the intermediate
setting covered in the above chart. It is felt that, for the purpose of this study, that setting is satisfactory because it was used for each type of airplane and the data are comparative.

6. Maps, Annex to Appendix "D" (page 10) show distances from Tokyo, S. Kyushu, and Okinawa which represent the radius of action of each type of airplane with both full bombload and no bombs. The radius of action is one half the range as shown in Appendix "D" (page 9). No allowance has been made for reserve. Distance was based on a throttle setting for maximum cruising power. This could be extended some by using a long range setting but for comparative purposes it is considered sufficient to show possibilities under the same operating conditions for all types of airplanes.

7. Figures available for the B-32 are still theoretical. No operational data have been issued for this type airplane. Because it is not currently intended to use B-32's to any great extent and no authentic operational data is available, a comparison has not been made in this study.

8. In computing the returns from the manpower expended no effort was made to assess all of the actual cost but merely comparative costs of variable factors. For instance, Air Force and Wing headquarters have not been counted in the cost because the variation therein between the different types of groups is negligible.

C

CONCLUSIONS

9. That the relative order of efficiency of the several types of airplanes from the standpoint of logistic support is as follows:
<table>
<thead>
<tr>
<th>Model</th>
<th>Wt. of bombs per pel. gas consumed</th>
<th>Wt. of bombs per man month expended</th>
<th>Shipping required per ton of bombs dropped</th>
</tr>
</thead>
<tbody>
<tr>
<td>B-29</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>B-25</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>A-26</td>
<td>3</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>B-17</td>
<td>4</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>B-24</td>
<td>5</td>
<td>3</td>
<td>5</td>
</tr>
</tbody>
</table>

**RECOMMENDATION**

11. That the Joint Logistics Committee note this study.
Appendix "A"

Comparative logistic data of certain types of bombers
(1 photostat)
## APPENDIX A

### COMPARATIVE LOGISTICAL DATA ON CERTAIN TYPES OF AIRCRAFT

<table>
<thead>
<tr>
<th>Type Airplane</th>
<th>Max. Cruising Range (miles)</th>
<th>Taxi Load Capacity (lbs per Group)</th>
<th>Hourly Hourly Maintenance Cost (per Op)</th>
<th>Construction Crew (no., years)</th>
<th>Fuel Consumption per ton per Airplane</th>
<th>Casualty Consumption per ton per Airplane</th>
<th>Casualty Consumption per ton per Airplane</th>
</tr>
</thead>
<tbody>
<tr>
<td>B-29</td>
<td>2,100</td>
<td>20,000</td>
<td>6</td>
<td>36.6</td>
<td>12.5</td>
<td>794,680</td>
<td>112,113</td>
</tr>
<tr>
<td>B-17</td>
<td>1,600</td>
<td>18,000</td>
<td>6</td>
<td>24.6</td>
<td>12.5</td>
<td>743,680</td>
<td>112,113</td>
</tr>
<tr>
<td>B-24</td>
<td>1,600</td>
<td>18,000</td>
<td>6</td>
<td>746</td>
<td>12.5</td>
<td>794,680</td>
<td>112,113</td>
</tr>
<tr>
<td>B-26</td>
<td>1,075</td>
<td>18,000</td>
<td>6</td>
<td>36.6</td>
<td>12.5</td>
<td>794,680</td>
<td>112,113</td>
</tr>
<tr>
<td>A-26</td>
<td>1,150</td>
<td>18,000</td>
<td>6</td>
<td>36.6</td>
<td>12.5</td>
<td>794,680</td>
<td>112,113</td>
</tr>
</tbody>
</table>

* No allowance made for reserve

** Estimation based on AAF planning factors derived from data on actual experience


Prepared by the Joint Logistics Plan Committee - 8/11/45
APPENDIX "B"

CUMULATIVE BOMBS DROPPED SINCE INITIATION OF CONSTRUCTION

(1 photostat)
APPENDIX "B"

CUMULATIVE BOMBS DROPPED SINCE INITIATION OF CONSTRUCTION

Months signify the time since initiation of airfield construction.
Tonnages are cumulative for 12 months from initiation of airfield construction.
APPENDIX "C"

COMPARATIVE COSTS IN SHIPPING

Of the five types of bombers considered in this study the B-29 gives the greatest operating efficiency. The tonnage required to support each of the other types of bombers in dropping bombs equivalent to that of a B-29 group for one year has been computed. This has been translated into measurement tons saved.

<table>
<thead>
<tr>
<th>Airplane</th>
<th>M/T's Expended</th>
<th>M/T's Support</th>
<th>M/T's Saved Dry Cargo</th>
<th>Avgas (bbls)</th>
</tr>
</thead>
<tbody>
<tr>
<td>B-29</td>
<td>102,000</td>
<td>188,000</td>
<td>188,000</td>
<td></td>
</tr>
<tr>
<td>B-17</td>
<td>37,000</td>
<td>149,000</td>
<td>400,000</td>
<td>64,500</td>
</tr>
<tr>
<td>B-24</td>
<td>31,000</td>
<td>150,000</td>
<td>493,000</td>
<td>89,500</td>
</tr>
<tr>
<td>B-25</td>
<td>23,000</td>
<td>84,000</td>
<td>372,000</td>
<td>94,500</td>
</tr>
<tr>
<td>A-26</td>
<td>26,000</td>
<td>85,000</td>
<td>359,000</td>
<td>69,700</td>
</tr>
</tbody>
</table>

*Operations for one year for one group in bombs and ammunition expended.

**Excludes bombs and ammunition

Note: Liberty ships load equal 10,000 M/T's.
T-2 tankers equal approximately 171,000 Bbls.
ANNEX TO APPENDIX "C"

PERCENTAGE OF AMMUNITION AND BOMBS EXPENDED TO TONNAGE FOR ITS SUPPORT

(1 photostat)
ANNEX TO APPENDIX "C"

PERCENTAGE OF AMMUNITION AND BOMBS EXPENDED TO TONNAGE REQUIRED FOR ITS SUPPORT

Month - is the period after initiation of construction of the airfield.
Percentage - is the ratio between tons of bombs and ammunition expended and tonnage consumed to support the operation.
Annex to Appendix "C"
APPENDIX "D"

1. Inasmuch as gas tanks for additional range are installed in specific sizes or units the bomb load carried will not necessarily be varied in direct ratio to variations in range. However, for logistic purposes the tonnage variation in fuel will be so nearly reflected in the possible variation of bomb load that they can be assumed as being equal.

2. The radius of action of the airplane is shown on attached maps (Annex to Appendix "D", sheets 1 and 2, page 10). It allows no gasoline reserve.

(l photostat)
ANNEX TO APPENDIX "D"

RADIUS OF ACTION OF VARIOUS TYPES
OF BOMBERS MAXIMUM RANGE FULL MILITARY LOAD

(2 photostats)