

199 States of Germany and was attached to the appropriate sub-  
 division of the Reich Board of Industries. In organizing the  
 factory air defense system, the Reich Board of Industries  
 acted in accordance with directives received from the Comman-  
 der in Chief of the Air Force and Reich Minister for Aviation.

200 By means of "plans of procedure" and bulletins issued from  
 time to time the Board established the principles to be ob-  
 served in the actual development of the factory organization.  
 These plans and bulletins were drafted in agreement with the  
 Reich Minister for Aviation and Commander in Chief of the Air  
 Force. For the execution of its instructions the Board re-  
 lied on its own agencies at the regional, district, and local  
 267  
 levels.

The Air Defense Act of 26 June 1935, together with the  
 whole complex of amendments to that Act and the subsequent  
 decrees and orders of implementation provided the necessary  
 268  
 legal basis for the instructions described above.

The whole complex of factory air defense was a problem  
 of self administration. The basic principle was that industry  
 was to establish and operate the system with its own means,  
 and that the State would support such efforts, insofar as

267. Von Luering: "Aufbau und Durchführung des Werkluft-  
schutzes," in Knipfer-Hampe, p. 212.

268. See II, d, above.

282

200 financial expenditures were required, by means of tax exemptions.

Besides the regional agencies, two special agencies were established as an exceptional arrangement for the coal mining industry.

269

2. Organization. The composition and strength of the factory air defense forces varied in accordance with the size, significance, and nature of the installations concerned, and were determined by the Factory Air Defense Regional Agencies in agreement with the appropriate air district commands.

270

Map and practical exercises served to provide a continuous system to check and test the organization, and the air district commands carried out continuous inspections, which also covered the technical and constructional measures of factory air defense, which were of decisive importance for the preservation of production capabilities.

The regional organization of the factory air defense system is shown in Appendix 22, the local organization in Appendix 23.

271

272

Where several factories were located within the area controlled by one and the same local agency, regulations provided for two possible methods of mutual support in air defense. These were as follows:

271. Appendix 22: Factory Air Defense Organizational Chart.

201

(1) Mutual Support Agreement. This method imposed no restrictions on the independent authority of the individual factories concerned. The primary requirement for all factories or other installations involved was that of maintaining production.

(2) Factory Defense Community. Under this system the chief of the community established the principles governing mutual support in agreement with the several factories or other installations involved. The possibility existed to assign under his direct control, for operational purposes all operational units as well as the factory air observers. From available records, however, it appears that very little use was made of this possibility.

202

Even in cases where no Mutual Support Agreement or combined Factory Defense Community existed, however, it was the self-understood duty of every factory or other installation not currently affected to support nearby installations stricken by attack, provided such support could be given without too seriously impeding the manufacturing operations of the supporting factory. Apart from this it was a responsibility of the local air defense chief to provide support to attacked factories or to request such support in the form of mobile forces,

272. Appendix 25: Organizational Chart Showing Factory Air Defense Composition. See "Werkluftschutz," by Schuenemann, 1953. Karlsruhe Document Collection.

264

202 units of the Passive Air Defense troops, auxiliary military detachments, excavator units, etc.

Special salvage and rescue detachments were established at the various local factory air defense agencies in large industrial regions. These detachments were staffed by specialist personnel from the mines and equipped with special items of equipment, and rendered excellent services.

As the Industrial Air Defense Division of the present  
Federal Union of German Industries puts it: 273

It is our opinion that the regional employment of firefighting services within the scope of the factory air defense system can only be achieved through a form of mutual air defense communities. However, the factories themselves would have to establish an arrangement of this type in order to insure that the various factory managers themselves would be able to control these forces. During the past war a number of factories established arrangements of this kind, which were as follows:

On receipt of an advance air raid warning, each factory dispatched some of its heavy firefighting vehicles to some point not far distant and where at least superficial protection was available, for example in the form of embankments. Towards the end of the war some factories

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202 kept their high capacity firefighting vehicles permanently outside of their premises, so that after a heavy air attack the factory air defense chief was never without heavy firefighting machines.

In future arrangements of this kind it will be necessary to arrange, if at all possible, that the firefighting vehicles so placed outside of factory premises are capable of all-terrain travel; otherwise there is no certainty that they can be used at all in the factory when needed. Arrangements should also provide the possibility to call in by radio firefighting forces stationed outside of the factory

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203 premises.

Initially, the regulations governing the organization of factory air defenses were consolidated in Air Force Field Manual L. Dv. 756, which was organized as follows:

274

- Part I: Mission and Organization of Factory Air Defense.
- " II: Training and Testing in the Factory Air Defense System.
- " III: Instructions for Factory Air Defense Chiefs and Their Auxiliary Personnel.
- " IV: Factory Air Defense Building Construction.
- " V: Factory Air Observation Services.

273. Comments by the Industrial Air Defense Division of the Federal Union of German Industries on an article: "Einigkeit reserven fuer den Werklairtschutz," by Erich Stein in Ziviler Lairschutz, Volume 3/1955, p. 68; Verlag Gasschutz und Lairschutz, Koblenz.

274. Some of the regulations were taken over in Field Manual WLSDv, published later. No complete records are available

203

VI: Factory Fire Protection.

VII: Factory Medical Services.

VIII: Factory Veterinary Services.

IX: Factory Gas Defense Services.

X: Factory Salvage and Repair Services.

XI: Factory Telephone and Alerting Services.

XII: Instructions for other Operational Factory Air Defense Forces.

Annexes to Air Force Field Manual L. Dv. 756, compiled in very close cooperation with the Reich Board of German Industries, contained instructions for the various individual types of factories and other installations, as the following compilation shows:

## Annex 1: Special Instructions for Breweries.

"	2:	"	"	"	Lignite Mines etc.
"	3:	"	"	"	Electric Power Plants.
"	4:	"	"	"	Mineral Oil Drilling and Producing Industries.
"	5	"	"	"	Gas Works and Gas Pipe- lines
"	6	"	"	"	Glass Works.
"	7	"	"	"	Passive Air Defense in Underground Mining. <sup>275</sup>
"	8	"	"	"	Hydrogenation Plants.
"	9	"	"	"	Ediler Plants.

<sup>275</sup>. Air Force Field Manual L. Dv. 756/7, see Karlsruhe Document Collection.

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Annex 10: Special Instructions for Flammable Fluids Storage  
Depots.

11:	"	"	"	Water Works.
12:	"	"	"	Iron Works.
13:	"	"	"	Trimmed Timber Depots.
14:	"	"	"	Sugar Industry.
15:	"	"	"	Potato Dehydration Industry.

The implementation of factory air defense measures in the various installations was governed by the various plans of procedures, bulletins, <sup>276</sup> directives, and experience reports <sup>277</sup> published by the Reich Board of Industries, which were subject to approval by the Reich Minister for Aviation and Commander in Chief of the Air Force in agreement with the other Reich Ministries involved. <sup>278</sup>

Later, around 1941, the Reich Minister for Aviation and Commander in Chief of the Air Force issued special regulations for the factory defense system, under the title Factory Air Defense Filled Manual (Werkluftschutz Dienstvorschrift).

Special attention is drawn here to Part III: "Instructions for Factory Air Defense Chiefs and their Assistants--Factory

<sup>276</sup>. First Bulletin, dated 1 December 1931, concerning recommendations and viewpoints for factory air defense in the various individual installations.  
<sup>277</sup>. Second Bulletin, dated 15 November 1932, concerning Gas Defense.  
<sup>278</sup>. Third Bulletin, concerning constructional problems.  
 Fourth Bulletin, dated 15 January 1934, concerning map exercises.  
 Fifth Bulletin, dated 15 August 1933, concerning factory fire protection.

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Air Observers (Anweisung fuer den Werkluftschutzleiter und seine Hilfskraefte--WerkBeobachter), which dealt with the missions, selection, organization, and training of factory air observers and was compiled with assistance from the Reich Board

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of Industries.

Later, the Reich Minister for Aviation and Commander in Chief of the Air Force also issued experience reports on the

281

subject of factory air defense.

In addition to the authority of the Reich Minister for Aviation and Commander in Chief of the Air Force to issue directives and the authority of inspection vested in the Inspector of Passive Air Defenses, <sup>military and</sup> certain/civilian offices also had what could be called supervisory powers in the factory air defense system. In the military field these were the air district commands, in the civilian field the local chiefs of police administration in their capacity of local air defense chiefs. The latter were responsible for the proper coordination of all efforts in the various fields of passive air defense within the areas under their control. The various Commanders of

277. For example "Directives for Gas Detection and Decontamination Activities," undated  
 278. Experience Report # 3, 1 December 1936, concerning map and practical exercises, and Experience Report # 4, 1939, on the same subjects.  
 279. The sources just referred to are on file at the Bundesverband der deutschen Industrie, Bonn.  
 280. Karlsruhe Document Collection.  
 281. Example: Experience Report # 10 "Factory Air Defense (Der Werkluftschutz)" March 1942. Karlsruhe Document Collection.



289

205 Regular Police also had supervisory authority commensurate with their position as the superior officers of the local air defense chiefs.

During the war the organization of the factory defense system was altered in order to obtain uniform control and uniform tactics in the whole passive air defense system. Under the new organization the Factory Air Defense Regional Agencies (Bereichsvertrauensstellen), at the provincial and State or Land level, were placed under the air district commands, the district agencies under the appropriate commanders of regular police, and the local agencies under the appropriate local passive air defense chiefs.

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The above change was introduced at the beginning of the war and naturally produced difficulties, which in each case had to be solved as personality problems. These measures resulted in voluminous correspondence, since too much prominence was frequently given to formal considerations of competency.

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In practice the operations of the factory air defense system underwent very little change, and in retrospect it can be considered an established fact that it is not wise during periods of crisis or at the beginning of a war to change a smoothly functioning peacetime command organization while retaining the peacetime system of dealing with administrative problems.

282. Appendix 2: Special Annex 10 to Mobilization Plan (Air), Paragraphs 5-7.

207

Basically, the heads of installations were responsible for the maintenance of production and for the implementation of measures for the protection of the employees, and were required to meet established deadlines in the implementation of these measures. In these activities they were supported by the their factory air defense chiefs. Each factory air defense chief was appointed by the factory manager or director, and was obligated by the local air defense chief to perform his passive air defense duties.

Under the responsible management of his factory, the factory air defense chief prepared a factory air defense plan, <sup>282a</sup> in the form of a memorandum. Following a prescribed form, the plan ~~described~~ contained a precise description of the factory layout and all details on required passive air defense measures, such as the procurement, storage, and distribution of apparatus and equipment; the organization of personnel for air defense operations; the establishment of operational and replacement personnel groups; training; the establishment of command and rescue and salvage posts; signal communications; constructional measures; the redistribution of stores, etc.; production requirements; emergency crews, etc.

During war each factory air defense chief had a <sup>282a</sup>. A specimen factory air defense plan is on file in the Karlsruhe Document Collection.

207

particularly difficult mission: On the basis of air situation reports received currently from the air warning detachment<sup>283</sup> it was his duty to determine, by means of a recommendation to the factory manager, the proper moment when the air alert was to be sounded for his factory, and when manufacturing operations could be resumed. These decisions had an incisively important impact on the factory output and on the personnel employed, and thus on the conservation of the national military potential. The expert knowledge, acute sense of responsibility and versatility of factory air defense chiefs made it possible during the war to continue production during 70 percent of the time of public air alerts. This figure alone illustrates the responsibility borne by the factory air defense chief.

While endeavoring to exploit time to the maximum for production, the factory air defense chief on the other hand had to keep in mind when making his decision, or his recommendation the safety of the personnel in the factory, and had to insure that the alert was given in time for them to seek shelter. Far too little is known by the general public on the subject of the high performances of factory air defense chiefs and on that of the heavy burden of responsibility these men shouldered in their selfless devotion to duty.

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283. See IV, a, 6, above.

As the war progressed, the responsibility for factory air defense shifted steadily in an increasing measure to the factory management itself. With the increasing severity of air attacks it frequently became necessary to have not only the factory air defense chief but also a permanent member of the factory management at the command post to assume overall responsibility. However, this altered nothing in the position of the factory air defense chief, who directed all damage control activities, although he was required to place main emphasis where the factory management decided it was commensurate with the requirements of manufacturing or producing operations.

It was found sound practice to restrict the responsibilities of the factory air defense chief to the preparation of all passive air defense measures and to the control of damage control activities, and to have a separate organization for repair and restoration activities.

When new works were established, the Reich Minister for Aviation and Commander in Chief of the Air Force intervened, through Air Force Inspectorate 13, to insure that air defense consideration were given proper regard from the outset. The establishment of the Genshagen aircraft engine factory, near Berlin, is quoted here as an example. This factory was constructed in 1936-37 and, in the light of concepts current at

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284. Saal: "Luftschutzbericht ueber den Luftangriff auf das Flugmotorenwerk Genshagen bei Berlin am 8.8.1944. Karlsruhe Document Collection. Appendix 24.

208 the time, was considered a model installation from the view-  
 point of air defense. The factory admittedly still had no  
 bunker type air raid shelters, but all other applicable prin-  
 ciples were effectuated, such as the proper choice of locality,  
 dispersed layout, protective shelters, camouflage, blackout  
 facilities, and appropriate measures to organize both person-  
 nel and materiel for passive air defense activities. In re-  
 sponse to insistence by Air District Command III underground  
 galleries for personnel protection <sup>during the war</sup> were constructed/and the  
 existing camouflage and concealment measures were improved by  
 the use of smoke and dummy installations. As a result, the  
 enemy failed to find this important factory for years, and it  
 only came under attack on 8 August 1944 for the first time. 285  
 Although heavily attacked on that day by approximately 800  
 4-engine daylight bombers, and although approximately 8 000  
 employees were present on the factory premises, only roughly  
 2 percent casualties were inflicted. Production was admittedly  
 interrupted, but it was possible later to transfer the factory  
 to a new site.

An instructional passive air defense film was produced  
 on the Genshagen factory and attained great importance for  
 training purposes and for the popularization of the idea of  
 passive air defense.

285. Appendix 25: Ingenieur Hans Bolenz:  
~~Beob.~~ "Bemerkenswerte ueber einen Tagesluftan-  
 griff auf das Flugmotorenwerk" - Cont. on p. 294

294

209 passive air defense.

As the manifold preparations for factory air defense progressed, emphasis in the larger and most important works shifted steadily to activities which to a greater or lesser extent affected the flow of production. Initially, prominence had been given to such matters as direct air defense organization, for example, the activation of the individual operational teams and their equipment and training, and to the construction of shelters. Later, emphasis shifted to protective measures against secondary hazards due to the nature of the factory involved; to the provision <sup>of</sup> dual power supply lines; to problems of the manufacturing processes within factories and the establishment of parallel processes providing alternate means of production; and in the case of new works to the problems of dispersed layout and the removal of entire elements of the factory.

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3. Training. If the factory air defense system was to accomplish its manifold missions, a training program was necessary which had to be continuous and had to be adapted currently to the latest experience gathered in the field, and in which all personnel involved had to participate. What made this all the more necessary was the fact that the establishment of

285--Continued--for Daimler-Benz-Motoren GmbH, GnesHagen," 21 October 1953.

209 numerous new factories resulted in heavy shifts of personnel.  
 Each factory had its own training establishment, where all fac-  
 tory personnel received general basic training, and the members  
 of operational and standby groups received specialized train-  
 210 ing.

The factory air defense regional schools gave training  
 to factory directors and managers, factory air defense chiefs  
 and their deputies, group leaders, and factory air defense  
 training chiefs.

The Factory Air Defense Central School gave training to  
 factory directors and managers, factory air defense chiefs,  
 and to specialists in especially important factories on such  
 subjects in particular as building construction, gas defense,  
 factory fire protection.

The Reich Minister for Aviation and Commander in Chief of  
 the Air Force issued the necessary directives governing these  
 288 training activities, and also some of the experience reports  
 on the subject of factory air defense, for example Experience  
 289 Report # 10 of 1942, in order to insure that the latest exper-  
 ience would become available speedily for training purposes.

287. See VIII, a, 3, below.

288. Dr. Wende, Essen: "Erfahrungen des Werkluftschutzes im  
 2. Weltkrieg," in "Schriftenreihe ueber Zivilen Luftschutz,"  
 Volume 1; Verlag Gasschutz und Luftschutz, Koblenz, 1953.

288. Air Force Field Manual WLS Dv: Factory Air Defense, Part II:  
 Training in Factory Air Defense, Vol. 1: Factory Air Defense  
 Training 1942. Karlsruhe Document Collection.

289. See Footnote 281, above.

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A profusion of training material was available to the  
 290  
 Factory air defense training schools, and what were called  
 training letters (Abwehrbriefe) served to present and dis-  
 seminate this material in an easily intelligible form.

4. Experience in the Field of Factory Air Defense.

aa. Organization. In general, the organization of  
 the German factory air defense system served its purpose. Con-  
 cerning the subject of the top level control organization, the  
 reader is referred to what has been said on pages 280-281 above,  
 (page 199 of German manuscript). An important point to be  
 borne in mind is that top level representatives from industry  
 should participate from the outset in the planning of all of-  
 ficial measures and in all conferences and discussions.

211

Measures involving an extraordinary outlay of capital will  
 require subventions or some other form of support from the  
 Government.

The mission of regional agencies is to insure that factory  
 air defense measures are not neglected in any case, since other-  
 wise irreparable damage might result. These agencies have  
 the closest possible contact with practical conditions, are  
 aware of the needs, desires, and worries of their factories,  
 and have the duty to institute punitive measures when neces-  
 sary against neglectful factory directors or managers.

290. Karlsruhe Document Collection: Photostated illustrations  
 from training letters.



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211

As factory air defense chief it is absolutely essential to appoint a highly qualified person, and to give/<sup>him</sup>a suitable deputy, whose assistance will be indispensable if an actual attack occurs.

The composition, organization, and training of the factory air defense forces proved suitable. The plan to give each employee as varied training as possible could only be put into effect where factories with a relatively small number of employees were compelled to use all employees in passive air defense activities and give them the appropriate diversified training. In large factories and other installations it is advisable to give training for diversified missions to a not too large number of specially selected employees for use in what might be called multi-purpose teams.

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Within the circumscribed scope, the system of mutual support between adjacent factories had a favorable impact on the preservation or speedy restoration of manufacturing capacities. However, this system could only be put into operation when the current air situation permitted the release of operational groups for the purpose.

Although factory employees were seriously perturbed during air attacks against factory-owned residential areas, because of their concern for the safety of their families, it

291. See Footnote 287 and II, c, above.

212 is not possible to employ factory air defense units in such areas, meaning outside of their factories. Damage control, including all immediate measures, in residential areas is a mission of the local air defense chief, with whom special arrangements must be made to insure that manufacturing operations will not be endangered.

Cooperation between the factory air defense system and the passive air defense air raid warning services is of incisive importance for the conservation of production potentials. On this subject the reader is referred to Chapter IV, a, 6, above.<sup>292</sup> The point here is to exclude certain factories and other installations which are of particular importance for the Nation in general and for armament requirements from the public warning and alerting system and to institute for them a flexible warning and alerting system with the object of enabling them to exploit for producing operations every minute of time during which work can continue without any immediate and acute danger of attack. Under the German system special regulations of a very detailed nature governed cooperation between factory air defense units and the units of the passive air defense forces.

The increasing attention paid by attacking air forces  
292. See IV, a, 6, above.

212 to installations of the mineral oil producing and processing industries and the high sensitivity of such installations to air attack call for increased consideration and increased protection by the passive air defense forces made available for the purpose.

An important point in the whole factory air defense system was the maintenance of continuous cooperation between the factory management and the firefighting forces. In agreement with the factory management the commanders of locally stationed passive air defense battalions had to make all preparations in advance for all planning and operations. For battalions which might have to be called in from outside areas when support was needed, the factory management ~~had to~~ had to maintain ready an adequate number of pilot personnel fully familiar with all local conditions.

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By means of personal inspection and discussions with the factory air defense chief, the commanders of motorized passive air defense battalions had to familiarize themselves thoroughly with all details of the locality. All company commanders and platoon leaders in each such battalions had to participate in the local orientations. It was found advisable for these purposes to prepare simple plans of the water supply systems and sketches showing possible detour

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213 routes and such details as points particularly sensitive to

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air attack.

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bb. The Economy. The following passages are quoted from a study on the subject of industrial air defense in World War II:

If it is desired to list in some semblance of an order of importance the causes which materially affected industrial output the following picture would result:

(1) Damage of any type done to any part of the electricity supply system;

(2) Damage to the homes of employees;

(3) Damage to the actual manufacturing premises

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and installations.

The combines which existed and presently still exist for reasons of economy in operations between the industries producing coal and iron, coal and electricity, and coal and chemical products became evident in serious disadvantages when elec-

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tricity supplies were interrupted. It happened that relatively minor bomb damages to power stations resulted in total failure of the entire station. Due to such causes as a short circuit; mechanical disruptions; or low steam pressure when a boiler plant was damaged, relays would be set in operation which automatically closed off certain machinery and thereby placed

301

213 excessive strains on other machinery, causing them in turn to fail, thus turning results into new causes of interruption.

214 The reasons for chain reactions of this type are to be found in the fact that working operations make it necessary to only gradually close down a power station over a specific period of time and that even then it cannot be closed down completely. Furthermore, it was impossible to accept the responsibility to close down power stations when damaged since the results for industrial users of power, for towns, and for homes would be particularly harmful during periods of air  
297 alert.

In time of war it is therefore a basic necessity to depart from the combined economy system and to de-integrate the closely intermeshed sources of power supply. At least it is necessary to make all major factories and other installations independent of outside power supplies, so that they could continue operations for a considerable time without having to

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293. Experience Report # 32 on the Subject of Passive Air Defense (Aus. Erfahrungsbericht Nr. 32 auf dem Gebiet des Luftschutzes).
294. Erich Stein: "Praktische Erfahrungen fuer den Industrie-luftschutz aus dem letzten Kriege." Karlsruhe Document Collection.
295. See Footnote 294, above, and II, a, above.
296. See also Dr. Ingenieur Friesecke, Bonn: "Bauliche Massnahmen im Rahmen des Industriellen Luftschutzes," in Ziviler Luftschutz, 1954, Volume 12, p. 353.
297. Particularly for traffic and for damage control activities.

214 rely on gas, electricity, and water supplies from the sensitive combine system.

Among other, the following measures could be taken into consideration:

The establishment of the largest possible number of smaller power producing plants, alternate installations, and other possibilities of substitution;

Link-up with public utility supply networks;

A system in which several physically separated plants or groups of plants of various types (not only electricity) would supply power for the most important machinery or other installations in large factories;

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It is essential to have at least two completely independent sources of power supplies. All power conducting lines, and in particular all pipelines, must be laid on, at least in duplicate, along different routes, and must have remote control valves, speedily functioning close-off apparatus, and pipe leak valves.

215 One useful method adopted, which also proved important for the continuation of development and research work, was that of preparing all construction data in duplicate, for which purpose microfilm was also used, and storing a copy outside of the factory.

298. See Footnote 294, above (Frich Stein, p. 8).

215 of the factory premises.

Following a fire in the Heinkel factory, Field Marshal Milch had ordered as early as in 1933 that all important constructional data were to be available in duplicate. The duplicate copy was to be stored at some outside place which could be considered as safe as possible.

299

Beginning about the third part of the war the gradually increasing shortage of man power began to interfere with production. After the Western Allies commenced their large-scale attacks with explosive bombs, employees began to leave their employment in factories, particularly out of concern for their families. When the families were evacuated, initially on a voluntary basis, the working personnel who remained behind showed signs of exhaustion, due partly to the lack of care by their families. These phenomena were largely of a psychological nature. The only possible way to avert them would be to take timely measures to protect employees in factories and other installations and give them a feeling of confidence in their factory air defense system, a feeling which must be constantly maintained and improved. This can best be done by constructing adequately numerous and adequately strong shelters at the working sites. Another important point is to repair the armament worker's home, if it has been damaged, or to

299. Karlsruhe Document Collection: "Auswirkungen feindlicher Bombenangriffe auf die Luftwaffenrüstung." Excerpt from 17 April 1942 Special Supplies and Procurement Services conference.

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215      speedily give him new quarters.

In spite of the steadily growing shortage of skilled workers, it is a psychologically sound policy to allow special leave or other privileges in cases of special merit or need.

One point must be emphasized here:

That manufacturing processes continued was due primarily to the devotion of factory personnel to their duty. Many of them, after having been bombed out of their homes, or after having carried out makeshift repairs to their damaged homes, returned doggedly to their work. In their entirety they bore for months on end the entire political, economic, and physical burden of uninterrupted terrorization bombing of the severest nature conceivable."<sup>300</sup>

cc. Building Construction. The subjects of site selection,<sup>301</sup> camouflage,<sup>302</sup> dispersed lay out, and the transfer to new sites<sup>304</sup> will be dealt with under the appropriate headings of the present study.

In addition to the principles generally involved in shelter construction,<sup>305</sup> the following apply in particular:

It was essential to place the following elements in protected premises:

The directing elements of the factory air defense sys-

300. Erich Stein, p. 18 (See Footnote 294, above).  
 301. See VIII, a, 2, below. 302. See VIII, d, below.  
 303. See VIII, c, below. 304. See VIII, a, 3, below.  
 305. See VIII, a, 5, below.



216

system in each case must be located in protected shelters, and in some cases this is also necessary for the group and sector commands;

Protected points should also be provided for:

the operational units and their installations, such as salvage and rescue stations, observation posts, and factory observers; and for

The emergency working crews, in the close vicinity of their places of work; as well as for

The rest of the employees.

This necessity to provide protected points meant that certain ~~xxxx~~ areas of ~~particularly important~~ factories and other installations had to be reserved for the purpose; for the nerve centers of particularly important installations, and for the constructional drawings needed during work, as well as for the designing and development laboratories, it was only rarely possible to provide bomb-proof premises because of the high costs involved and the inadequate means available for building construction.

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In the case of newly established industrial works, construction plans from the outset were adapted to air defense requirements, although these requirements frequently had to be given second consideration because of the necessity to insure a quick initiation of manufacturing operations.

306 a

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For the building construction involved in air raid shelters, the Reich Minister for Aviation and Commander in Chief of the Air Force had issued very detailed instructions, dealt with previously in this study with reference to Experience Report # 3 of the Reich Board of Industries dated 1 December 1936.

There can be no doubt that the most effective protection was to be found in air raid tunnels. In accordance with local geological conditions, these can be constructed as underground tunnels or under overhanging slopes (Tief- oder Hangstollen). They can be made proof against practically anything, the only limiting factor being the thickness of the rock cover. This subject, as well as the subject of bunker shelter construction, is dealt with in a special section of the present study under the title "Construction of Air Raid Shelters."

Shelter trenches were initially regarded with distrust by employees, but proved highly effective during the war.

Splinterproof and shell fragment-proof protection for machinery and other manufacturing and producing facilities was essential not only to insure continued operations but also to restore operability after damage done in air attacks.

306. Karlsruhe Document Collection: "Zeichnungen zum 3. Merkblatt: Baufragen im Rahmen des Werkluftschutzes (Anlage 3. Photostat Copy.

307. See VIII, a, 5, below.

308. See VIII, a, 5, cc, 1, below.

306

218 Splinter-catch inner walls, erected inside the outer walls in a manner consonant with local conditions, proved highly useful in the factory air defense system. The reader is referred here to the special chapter on this subject (VIII, a, 6, below), and to the special instructions for protection against splinters in industrial installations.

309

dd. Provisions for fire and gas protection, both in the form of precautionary and of active countermeasures, were required and practised in the factory air defense system with all emphasis.

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In the construction of new factories due regard was given to requirements in this field from the outset, from the requirement for dispersed layout to the points which had to be taken into consideration in actual building construction. Special precautionary measures were necessary for spaces in which materials especially sensitive to fire hazards were stored, such as models, timber, and coke.

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Cantonments in the vicinity of factories or within the factory areas were a constant source of concern. Useful precautions against fire hazards here were the provision of fire walls, cellars, and the erection of such structures at a safe distance one from the other and from other buildings.

309. Karlsruhe Document Collection: Photostat copy of "Banlicher Luftschutz," by Jacob Ghermann, in special editions of Volumes 10, 11, and 12, 1942.

310. See VIII, b, below. 311. See Footnote 294, and II, e, above.

312. Ibid.

313. Ibid.

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Within the scope of fire protection activities special importance attached to the "fire guards (brandwachen)", since success or failure in fire control activities hinges upon the speed with which initial action is taken. <sup>Initially,</sup> ~~As a beginning,~~ <sup>also</sup> fire guards were/stationed in the upper floors of industrial installations.

In 1943 the practice of stationing fire guards in the upper floors was discontinued in order to avert unnecessary casualties. At the latest when an air alert was sounded, the personnel detailed for this purpose were concentrated in suitably located air raid shelters or trenches, where they were organized in first line firefighting teams of one leader and eight men. During the attack\* and after the all clear signal, each such team sent out patrols of two to three men to check the area for which it was responsible. The maintenance of fire guards of two or three men in upper floor, as had been the general practice in the past, was now authorized only in the case of particularly important installations especially sensitive to fire hazards, and was subject to the provision of approved regulation splinter-proof shelters for these personnel.

In 1944 the "hydrant teams" maintained under the factory air defense system and the firefighting teams under the extended self-protection service were discontinued. Wherever there was

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219 no possibility to reorganize them as power-pump teams, new regulations required their inclusion in the "first line" fire-fighting team system.

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The number of teams to be established and the areas to be assigned to each team was contingent upon local conditions.

The first line firefighting teams were to take action immediately against detected incendiary bombs and/or against small fires, in order to prevent their spreading, using their light firefighting equipment, such as special passive air defense type hand pumps, and hydrant hoses, for the purpose.

220 . . . . . ee. The preservation of key installations and/or their speedy restoration to operability after air attacks required continuous special measures. Unfortunately, proper attention had not been given to the requirements of air defense in the rapid expansion of the air armement industry, for Buna artificial rubber and mineral oil works. In spite of repeated warnings, the responsible authorities had failed to make provisions against the scope air attacks were destined to assume. The result was that during the war and in accordance with the current attack situation, the Air Force Operations Staff, due to insistence by industry, made demands on the passive air defense system which could be met only in part or not at all

314. See "Erlass des R. d. L. u. Ob d. L. Az. 41 d. 14. 18 Nr. 2537 vom 17. 3. 1944 - L. In. 13/2 I Gb/2 I F."

220 with improvised means.

Within the air armament industry, the Fighter Production Staff (Jägerstab) was created to supervise execution of the fighter output program. This staff included a member from the Passive Airdefense Operations Staff to insure proper adherence to the requirements of air defense. By means of innumerable trips and conferences this staff did everything humanly possible to conserve and expand existing manufacturing facilities. Widespread destruction of the transportation systems produced the result that in many cases even willing employees found it increasingly difficult to reach their places of work when any considerable distance was involved, as was the case, for example, in the Berlin area.

At least for this branch of industry the efforts to secure new allocations of personnel for the construction of tunnels, air raid shelters, and splinter-catch walls, as well as shelter trenches were successful. However, it is only natural that even these measures could not completely remedy the weaknesses due to the way the responsible persons had neglected air defense requirements in the past inspite of all warnings.

On 22 August 1944 the Reich Minister for Aviation and Commander in Chief of the LuftForce, together with the Minister for

315. Karlsruhe Document Collection: "Auswirkungen der Luftangriffe auf die Kampferproduktion" (From records of Fighter Production Staff conference on 25 Mar 44); and "Luftschutzmaßnahmen im Jägerstab" (From records of Special Supplies and Procurement conference on 26 May 44).

221

Armaments and War Production, issued a joint decree under the title

Principles Governing the ~~new~~ Establishment of New and the Reconstruction, Expansion, or Displacement of Existing Factories of the Armament and War Industries on the Basis of Wartime Experience (Grundsätze fuer den Neu- Um- und Erweiterungsbau und die Verlegung von Fertigungsstaetten der Ruestungs- und Kriegsproduktion auf Grund der Kriegserfahrungen).

The decree established the fact that the safety of employees and of factories is the first requirement to insure maintenance of industrial output, and that therefore the following requirements in the following fields must be met immediately:

(1) Proper selection of locality;

(2) Appropriate planning, factory outlay, and types of construction;

(3) Provision of proper camouflage and concealment facilities for building sites and approach roads;

(4) Constructive training;

(5) Protection of personnel employed;

(6) Protection of machinery and other installations;

(7) Secure water and power supply systems;

(8) Fire prevention and firefighting measures;

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(9) Provision of proper blackout facilities and measures.

In addition to the above, the following instructions applied in the case of the transfer of factories to new sites:

(1) Important factory elements were not to be grouped closely together;

(2) Regulations had to be complied with requiring the planning, layout, construction, and subdivision of underground factory premises;

(3) Regulations had to be complied with governing any precautionary transfer to wooded areas.

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The instructions also required provision of the following for all personnel to be employed in the factories being transferred to new sites:

(1) Living quarters in camps situated at least 2 200 yards from the factory;

(2) Sleeping quarters within bomb-proof shelters. 316

For the only two Buna artificial rubber works in existence at the time, at Schkopau and Huels, for example, special mobile units from the Motorized Safety and Auxiliary Forces were made available on 27 November 1941 to carry out structural alterations within the works, and the Air Force from its allocations supplied fire vehicles and fire extinguishers for the factory fire fighting forces, which increased their effectiveness considerably. At the same time the Passive Air Defense Operations



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222 Staff once again stated its frequently reiterated demand that instead of establishing a small number of large-capacity factories, the policy should be to establish a larger number of smaller factories in areas not so seriously exposed to the

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threat of air attack.

Conditions were similar in the case of installations producing and processing mineral oil. The most important of these in existence on 1 June 1944 were as follows:

Ploesti, Launa, Poelitz, Bruex, Ludwigshafen-Oppau, Gelsenkirchen-Buer, Gelsenkirchen-Horst, Gelsenkirchen-Wohlheim, Wesseling, Boshlen, Magdeburg-Bothensee, Blechhammer-Heydebreck, Moosbierbaum, Oberhausen-Holtien, Hamburg-Grasbrok, Troegnitz, Misburg, Bremen-Oslebshausen, Schwarzhelde, Luetzkendorf, Freital, Gewerkschaft Rheinpreussen (Meerbeck Moers), IG Farbenindustrie A.G. Auschwitz und  
 318  
 Essener Benzin A.G., Chemische Werke Bergkamen.

ff. It would exceed the scope of this study to enter into details on experience in all the various fields, for which reason only two fields will be dealt with here:

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#### Passive Air Defense in the Tar Producing Industry:

The Protection of Gas Reservoirs. Here, for example, an important firm in the chemical industry achieved good results in its disk-type gas reservoirs (Scheibengasbehälter) by using carbonic acid type gas above the disk

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to prevent the combustion of gas-air vapors above the  
<sup>320</sup>  
 disk.

For experience in other fields the reader is referred to  
 the experience reports included in this study as an annex, in  
 particular to Parts I and II of that by Erich Stein: "Prak-  
 tische Erfahrungen fuer den Industrieluftschutz aus dem letzten  
 Weltkrieg."<sup>321</sup>

Dummy installations proved a highly successful means of  
 protection for important industrial works in the early stages  
 of the war, but were less effective during the later stages.  
 More details will be found in the special section on this sub-  
<sup>322</sup>  
 ject.

Special attention had to be paid to the water towers of  
 industrial installations when enemy planes used phosphor bombs.  
 Phosphor entering the water not only could do technical damage  
 but might also endanger the health of people.

Finally, the following example is offered as what can be  
 considered a model factory air defense system in a large indus-  
 trial concern of western Germany.

316. Karlsruhe Document Collection: Text of the most important  
 decree, issued on 22 August 1944 and based on the latest  
 wartime experience, see Appendix under title "Praktische  
 Erfahrungen fuer den Industrieluftschutz aus dem letzten  
 Weltkrieg," Part II, p. 16-26, by Erich Stein.
317. Karlsruhe Document Collection: "Schutz der Buna-Feratel-  
 lungsanlagen in Schkopau und Huesla gegen Fliegerangriffe,"  
 6 November 1941.
318. Karlsruhe Document Collection: "Schutz der Mineraloelbetrie-  
 be (Stand 2.6.1944)."
319. Karlsruhe Document Collection: "Der Schutz in der Isopro-  
 produktenfabrikation, by Major Hans Worringer, 1956.
320. For Part I see Footnote 294, above; for Part II see Foot-  
 note 316, above. 320. See Footnote 294, above and II, 3,  
 above.

The firm concerned was the Gutshoffnungshuette Oberhausen A.G. The works of this firm were organized for air defense purposes in four factory air defense groups and twentytwo sectors. Including the firms eight mines the whole defense system comprised widely separated areas. Major Erich Stein (retired), who at the time headed the firm's factory passive air defense system as the factory defense chief, deals with the subject of the organization and development of factory air defense at the Gutshoffnung mine in 1931-39<sup>322</sup> and with operations in the 1939-45 period, in a post-war study prepared in 1951.<sup>323</sup> He also describes the special difficulties encountered and the experience gathered up to the time when the whole factory air defense system was discontinued.

Particularly interesting points in his study are

The passive air defense plan under the test of actual events;

The favorable appraisal of the effectiveness of a dummy installation;

The treatment of the combine system in industry;

The water supply system;

Blackout difficulties in foundries and other iron works;

Flexible procedures in the passive air defense warning services.

<sup>322</sup>. See VIII, d, 3 below.

<sup>323</sup>. Karlsruhe Document Collection: "Der Werklufschutz der Gutshoffnungshuette Oberhausen A.G. 1931-45," by Major Erich Stein.

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224a

Before closing this chapter it is necessary to discuss the movement of personnel from works during air alerts. This measure was only taken when it was impossible to keep personnel in a factory because of ~~insufficient~~ <sup>inadequate</sup> possibilities for shelter. It must be stated here that the movement of personnel in such cases to shelter trenches situated only 550 to 1100 yards distant from the factory involved was a mistake; the chances of being killed in the trenches were greater than the probability of personnel being buried under debris within the works if these were stricken by bombs and destroyed.

For the above reasons efforts were made to remedy the situation speedily through the construction of bunker-type shelters. In the case of a number of large industrial concerns, for example the Heddernheim Copper Works (Heddernheimer Kupferwerke), these efforts were successful. In any event, it is a noticeable fact that in the case of firms which moved their personnel out of their works during air alerts work performances declined seriously, in some cases almost to rock bottom.

On the whole the movement of personnel from factories was more in the nature of a psychological measure and only became necessary in cases where heavy losses had been incurred in previous air attacks. At the IG Farben Works at Hoechst the idea of moving personnel out of the factory was never given

224a serious thought.

An interesting point is that, in the case of works which transferred to ~~country~~ country areas after being destroyed at their original sites, there was still a strong tendency among the personnel employed to leave their places of work. The problem here was less one of moving the personnel out of a factory than that of moving them back to their places of work.

In summarizing it can be said that the whole measure of moving personnel out of works during air alerts was due to the declining morale in view of the imminent collapse of Germany. The sole object of the measure was to prevent a complete dissolution of discipline.

f. Passive Air Defense in the Special Administrations\*

1. Passive Air Defense in Military Installations. The three branches of the military establishment--the Army, the Navy, and the Air Force, fell into the category of "Special Administrations" as defined in the Passive Air Defense Act, <sup>324</sup> and on their own responsibility carried out all necessary passive air defense measures in accordance with instructions and directives issued by the Reich Minister for Aviation and Commander in Chief of the Air Force, through Air Force Inspectorate 13.

<sup>324</sup>. See II, d, above.

\* The reader is reminded here that the Special Administrations category (Besondere Verwaltungen) included such services as the military, postal, and railway.

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These directives dealt not only with the organization of the passive air defense services as such, but also with the innumerable technical problems involved, for example, in the fields of building construction, camouflage, blackouts, rubble clearing, and fire prevention and fighting.

The appropriate directives for the Army, Navy, and Air Force High Commands were issued under the heading Supreme Military Command/Reich Minister for Aviation and Commander in Chief of the Air Force (OKW/P.d.L. u. OB.S.L.) The directives involved here were those which became necessary in the following subjects:

Passive Air Defense Air Raid Warning Services;

Processing of Experience in the Fields of Blackouts, Camouflage, and Deception;

New Methods of Dealing with Incendiary Ammunition;

Innovations in the Whole Field of Passive Air Defense Requirements in Building Construction;

Recognition of Newly Introduced Chemical Warfare Agents;

The Removal of Unexploded Enemy Bombs--a subject in which specific methods, subject to continuous modifications, only developed during the war.

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Whenever necessary directives, instructions, orders, and

324. See II, d, above.

325. See VIII, and VIII, a, below.

326. See VIII, d, below.

327. See VIII, c, below.

328. See IV, b, 1, above.

226 regulations on these subjects were drafted and issued in agreement with the Army and the Navy and frequently only after experimental work and tests had been carried out. Here it is necessary to point out that a large number of the regulations issued, dealing for example with such subjects as factory air defense, and port and waterway air defenses, also had to be applied in military installations of such types. This was the case, for example, for airfields used in direct connection with aircraft factories.

The detailed instructions issued were formulated later in field manuals. The basic manual here was Air Force Field Manual L. Dv. 410: Passive Air Defense in Billets and Installations of the Military Forces (Luftschutzdienst in Unterkünften, Anstalten, und Anlagen der Wehrmacht) with a number of annexes.

The following annexes are of particular importance:

L. Dv. 410/1: Passive Air Defense in Garrison Posts, Troop Billets (Luftschutzdienst in Standorten, Truppenunterkünften);

L. Dv. 410/2: Passive Air Defense at Air Ports (Luftschutzdienst auf Flughäfen);

L. Dv. 410/5: Passive Air Defense Behavior (Luftschützordnung);

L. Dv. 410/6: Building Construction Requirements for Passive Air Defense Purposes--Hospitals Excepted (Baulicher Luftschutz in Wehrmachtanlagen (ausser in Lazaretten));

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L. Dv. 410/7: Building Construction Requirements for Passive Air Defense Purposes in Hospitals (military and Other), Mental and Other Homes (Baulicher Luftschutz in Lazaretten, Krankenhäusern, Heil- und Pflegeanstalten);<sup>335</sup>

L. Dv. 410/8: Firefighting Services (Feuerlöschdienst);<sup>336</sup>

L. Dv. 410/9: Passive Air Defense Veterinary Services (Luftschutzveterinärdienst);<sup>337</sup>

L. Dv. 410/10: Equipment Catalogs (Ausrüstungsnachweisungen).<sup>338</sup>

Air Force Field Manual L. Dv. 410 itself contained regulations governing the following subjects:

a. Organizational measures--classification of the various types of installations; delimitation of authority; personnel matters; passive air defense service units; passive air defense behavior; passive air defense journals.

b. Technical measures--building construction; fire precautions; blackout facilities; camouflage; dummy installations; smoke screening;

c. Passive Air Defense Air Raid Warning Services.

d. Training and Exercises.

The annexes contained special regulations for the various individual targets and/or for the various categories of installations. Manual L. Dv. 410/2, for example prescribed the

329. See IV, f, 6 and 6, aa, below.

330. See Appendix A.

331. Karlsruhe Document Collection. 332. Ibid.

333. Ibid.

334. See VIII, a, 7, below.

335. Ibid.

336. See Appendix A.

337. Ibid.

338. Ibid.



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227 measures to be taken to protect aircraft, permanent installations, and personnel, as well as the camouflage and blackout requirements.

Air Field Manual L. Dv. 410 was published simultaneously by the Army as H. Dv. 410, and by the Navy as M. Dv. 268.

In its basic principles the manual proved satisfactory and above all provided a basis for uniformity in all passive air defense measures. For the implementation of the regulations contained in the manual the individual branches of the military establishment issued their own special regulations and instructions. Within the Air Force this necessitated a clarification of areas of responsibility. <sup>339</sup> The decree issued by the Reich Minister for Aviation and Commander in Chief of the Air Force through the Air Force Administration Office concerning passive air defense firefighting requirements in air bases and antiaircraft artillery and air signal battalions, <sup>340</sup> dated 20 December 1939, is quoted here to exemplify the great detail entered into in instructions to troops and other military installations. The decree establishes regulations for locally stationed and for mobile firefighting forces, for the procurement of apparatus and equipment, for the procurement and

<sup>339</sup>. Karlsruhe Document Collection: Decree issued by the Zentralamt on 2 February 1942 under the title "Luftschutz in Unterkufenften, Anstalten, und Anlagen der Luftwaffe--1942."  
<sup>340</sup>. Ibid.

321

228 training of personnel, for the organization of the fire services in the various installations, for fire prevention, and for water supplies for fire control purposes and for blackout facilities and measures.

It was a responsibility of the military services to coordinate their organization within the zone of interior with the overall passive air defense system, meaning that the military were required to adapt their measures to those of the local passive air defense organizations in agreement with the appropriate authorities.

Military Posts. All passive air defense measures, whether of an organizational or technical nature, which had to be prepared and carried out in a passive air defense locality for the protection of billets, installations, and real estate property of the military forces were a responsibility of the local military post commander.

All problems involved in the matter of air warning and air alert services, blackout measures, the allocation of military auxiliary teams, and the arrangement of mutual support agreements, could be solved only in consultation and/or agreement with the local passive air defense chief, since all such matters had to be uniformly arranged.

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228           Although each military installation initially was respon-  
 sible for its own protection--an arrangement in which hardly  
 229 any difficulties were encountered in the case of installations  
 of any considerable size, it was impossible in any of the lar-  
 ger garrisons to dispense with a centralized control and dis-  
 position of passive air defense forces. What made a uniform  
 control particularly necessary was the fact that the mounting  
 severity of air warfare made it more and more frequently neces-  
 sary to rely on support by auxiliary teams from all three  
 branches of the military establishment, including teams from  
 adjacent garrisons.

Initially, military auxiliary teams were called in pri-  
 marily in cases where the personnel available under the exten-  
 ded self protection system were inadequate for the purpose of  
 posting the necessary fire guards, which was particularly the  
 case in port cities. A decree issued by the <sup>Supreme</sup> Military Command/  
 Commander in Chief of the Air Force/Passive Air Defense Opera-  
 tions Staff on 1 May 1942 <sup>341</sup> required that in such cases the  
 military area headquarters (or in Naval or Air Force garrisons  
 the Naval Post Commander or Air District Command), acting in  
 agreement with the local passive air defense authorities, was  
 to make military auxiliary teams available for use as fire  
 guards already when the air danger signal was given, provided  
 341. Karlsruhe Document Collection. 342. See Iv, a, 5, above.

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local military circumstances permitted. However, this measure produced only partly useful results.

It is hardly necessary to produce evidence that the military auxiliary teams, well disciplined and equipped, and totalling in many cases more than 10 000 personnel, were soon found by the population to be an indispensable support force in large cities stricken by large-scale attacks.

In the early stages of the war cases of slight friction and difficulties concerning the areas of responsibility developed in connection with the control and disposition of these forces in major damage control areas. The direction of damage control action in such areas was a responsibility of the police authorities, and these authorities were not willing to submit to any restrictions in their handling of operations, which were conducted in accordance with specific

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basic principles. In like manner, it was hard to expect a military officer to subordinate himself without demur to the command authority of police organs.

Here it was a responsibility of the local post commander, acting in agreement with the local passive air defense chief who alone had comprehensive insight into the overall scope of the damage done, to have specific and clearly defined

343. Air Force Field Manual L. Dv. 751: Grundsätze fuer die Fuehrung des Luftschutzes.

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areas assigned to the military teams for damage control action, in which these teams could then act independently. Since the activities of the military teams were confined primarily to such action as the rescue and recovery of persons buried under debris, operations to clear the streets of rubble, and support to the civilian population in clearing and evacuating badly damaged houses, friction later in the war was a rare occurrence.

In the case of the passive air defense warning services differences developed between local air defense chiefs and some of the officers commanding replacement troop units. These commanding officers were not always willing to consider alerts given for the locality in which they were stationed applicable to themselves and their troops, since the frequent alerts and the surrounding circumstances involved seriously interfered with the troop training programs. Exceptions from the general air raid warning could be made in cases where the military installations were far enough from the actual passive air defense locality concerned to insure that the sounding of differently timed alerts would not cause confusion.

Passive air defense within each military installation was in accordance with the nature and size of the individual installation concerned. Thus, the measures required and applied in casernes differed from those in an administrative building, and

231 an air base had to take **protective** measures which differed from those taken in the case of a shipbuilding yard of the Navy.

The size of the various types of passive air defense groups (for example the firefighting, military, and salvage and rescue groups) had to be adapted to the size, type of structure, and contents of the building to be protected, and also depended on the number of personnel available for the purpose. In the event of an alert, these units were concentrated in specific shelters; in the case of large caserne complexes they were decentralized, meaning that the various units were placed in separate shelters. In addition, fire guards were usually posted to keep stairwells under observation. Here also the posting of observers on towers proved exceptionally useful.

All of the above forces were controlled by an officer or official specially appointed as passive air defense officer, who was not to be changed if at all possible.

Training for passive air defense chiefs and group leaders was given initially at the Reich Institute of the Air Force for Passive Air Defense, which up to the end of the war had a Passive Air Defense Instruction Company. Later, the Army and the Navy established passive air defense schools of their own, because the Reich Institute of the Air Force for Passive Air

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231 was unable to handle the steadily increasing numbers of trainees assigned by all three branches of the military establishment.

232 Besides their central training establishments, the military branches also established regional training institutions, experience having shown that only thoroughly trained passive air defense officers conversant with the latest experience in their field were able to organize their forces appropriately and to direct activities and technical measures properly. Thus, the innumerable passive air defense training courses were conducted in Military Area Command III, Berlin-Spandau. There a "Text Book for Passive Air Defense in the Army (Nachschlagewerk fuer den Luftschutz im Heer)"; arranged alphabetically, was published. The purpose of this work was to enable trainees to familiarize themselves speedily with their subject in theory.

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It was not possible to find satisfactory solutions for all passive air defense problems. First of all there were the clothing and equipment rooms, which almost without exception were in the attics of caserne buildings. There, they were naturally dangerously exposed to the hazards of air attack, ,

344. "Nachschlagebuch fuer den Luftschutz im Heer"; Verlag Ludwig Simon, Berlin SW 11, 1942.

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but their movement to other premises usually created serious difficulties. One of the complications here was that these rooms had to remain locked for administrative reasons, whereas fire guard personnel had to have immediate access to them during air alerts.

The safe storage of records, documents, and regulations at the various offices of the military forces caused even more serious difficulties where such offices were located within threatened passive air defense localities. In spite of instruction to do so, their movement to some outside spot was rarely even taken into consideration. This failure produced disastrous results in the case of the Army Regulations <sup>Center</sup> ~~xxxx~~ ~~xxxx~~ ~~xxxx~~ (Heeresdruckvorschriftenstelle), in Papestrass, Berlin. The protective measures taken here were totally inadequate, in spite of the fact that every room in the establishment, from the cellars to the attic, were crammed with printed regulations. Everything would have been destroyed here if a special detachment from the Reich Institute of the Air Force for Passive Air Defense had not been assigned to salvage the contents of the buildings.

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In summarizing the experience gathered in the past war the following lessons appear of particular value:

- (1) The control, organization, and employment of

<sup>345</sup>. See III, g, 2, above.



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passive air defense must be governed by directives and regulations which are identical for all three branches of the military forces. Close contact with the civilian passive air defense authorities is a categorical necessity at all levels of command (mutual support);

(2) Commands established specifically to direct the forces employed in passive air defense (command posts of garrison or post commanders and the passive air defense chiefs of sizable military establishments) must be outside of threatened target areas and must be in premises under a protective cover;

(3) Expensive weapons and equipment also must be removed from closed premises exposed to air threat, or they must be stored in protected spaces;

(4) Special attention must be given to the protection of valuable documents, records, and regulations. The use of microfilm for the purpose of insuring preservation of copies should be taken into consideration;

(5) Special military passive air defense schools are essential to give training to passive air defense chiefs, their deputies, and passive air defense group leaders.

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2. Railway Passive Air Defense. Basically, the same considerations applied to railway passive air defense

234 as those applicable to the other special administrations.

In view of the diversified missions developing for the railway services during the war, traffic and general operations had to be maintained as long as circumstances permitted. To meet this requirement it was essential primarily to fulfill two basic conditions, namely, to provide protection for all vitally important installations, and for the personnel required for the maintenance of traffic and general operations. <sup>346</sup>

The most important missions of the German railway system during war comprised

The handling of military transports;

The transportation of military and other vitally important commodities;

The maintenance of passenger traffic required for purposes of the military economy.

On the other hand, the fact that rail traffic is restricted to railroads, plus the high sensitivity of railroad installations to damages, made the whole rail system sensitive to air attack. In this respect large rail depots, important junctions, bridges, cuttings, etc., had to be considered as particularly sensitive to the air threat.

For the above reasons it was essential to introduce organizational and technical passive air defense measures in

346. "Luftschutzfragen der Reichsbahn," by Reichsbahnrat Geitmann, in Knipfer-Hampe, "Der Zivile Luftschutz."

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234 accordance with a carefully considered plan. These measures  
 were formulated in a regulation compiled with the approval  
 and assistance of the Office of the Reich Minister for Avia-  
 tion and Commander in Chief of the Air Force and issued by  
 235 the Minister for Communications and Traffic under the title

Directives for Measures to be taken for the Protec-  
 tion of Railroad Installations against Air Attack (Richt-  
 linien ueber Massnahmen zum Schutz der Bahnanlagen gegen  
A Angriffe aus der Luft (Flur)).  
 347

This regulation was published in the printed form in  
 1936 and in its opening passages dealt with the general prob-  
 lems of organization involved. The area of responsibility  
 of the railway passive air defense system covered all terrain  
 which was the property of the railway services. In each  
 railway management district (Reichsbahndirektionsbezirk) re-  
 sponsibility for all matters of railroad passive air defense  
 were assigned to the appropriate highest railway authority.  
 Under his orders the district special passive air defense  
 authority, designated as the Chief Passive Air Defense Con-  
 troller (Oberster Luftschutzleiter) was responsible for the  
 implementation of all passive air defense measures in detail.

railway  
 In turn, passive air defense chiefs were appointed for  
 each of the various installations, offices, etc. For example  
 347. Karlsruhe Document Collection.

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235 the Director of Repair Services (Werkdirector) was the controlling authority for railway repair and maintenance shops, each local station master controlled passive air defense within the area of his rail depot, and each factory air defense chief was responsible for his specific work or repair shop.

Each railway passive air defense controller was required to maintain contact with the appropriate air district command and/or naval base or post commander and acted in close cooperation with the district agencies of the factory air defense system, and the state groups of the Reich Passive Air Defense Society.  
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 cisty.

The air district commands, in turn, were required to consult the railway district management offices concerning the status of the rail passive air defense system and to insure the uniform direction of all measures taken, particularly within  
 236 declared passive air defense localities.

#### THE RAILWAY AIRCRAFT REPORTING AND AIR RAID WARNING SERVICE

The great importance of rail operations and the far-reaching effects on train traffic which any air raid alert had to be expected to produce created the necessity for special arrangements in the aircraft reporting and air raid warning services

348. See IV, e, 2, above.

349. See IV, c, 2, above

236 of the railways. Furthermore, the warning areas of the general air raid warning services did not coincide with the areas to be covered for the railways, since the service for the railway had to be arranged according to routes and not by areas. The German railway system therefore had a combined aircraft reporting and air raid warning service known as the Railway Aircraft Reporting and Air Raid Warning Service (Eisenbahnflugmelde- und Warndienst), and generally referred to in the abbreviated form of Eflu Warning Service (Efluwarndienst).<sup>350</sup>

The combined service comprised

Railway Passive Air Defense District Headquarters

Railway Air Raid Warning Centers

Railway Air Raid Warning Relay Stations

Railway Air Raid Warning Stations.

Each railway air raid warning center received continuous air situation reports from nearby aircraft reporting detachments<sup>351</sup>. In addition, close contact was maintained between the warning centers and the aircraft reporting detachments with the object of developing as precise information as possible on the current air situation at any given time.

#### MEASURES TAKEN IN RAILWAY OPERATIONS

The maintenance of operations was the main objective of the railway management, without regard for the air situation.

<sup>350</sup>. Appendix C, Items 20-41.

<sup>351</sup>. See IV, a, 1.

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236 Therefore, preparations had to be made to distribute shunting and train marshalling as well as all other traffic activities among as many rail depots as possible. For the major marshalling yards this produced problems practically impossible of solution.

237 Key personnel remained at their posts in all air situations. Plans had to be prepared in advance regulating all phases of all railway operations in consonance with currently received warning messages and/or orders. It is not possible to go into details on the subject here.

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#### PROTECTIVE MEASURES

CAMOUFLAGE AND CONCEALMENT. In the initial stages of passive air defense, efforts were made to conceal rail installations by means of camouflage. There was very little hope of success in these efforts, however, because of the easy identifiability of railroad installations. The important point therefore was to disguise the key points and other vitally important elements in a manner which made them inconspicuous among their surroundings. Here, the general principles of camouflage applied.

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BLACKOUT MEASURES. Technical measures requiring extensive and numerous tests were necessary to devise proper blackout measures for rail installations.

352. Karlsruhe Document Collection: "Eluri," Items 42-53.  
353. See VIII, d, below.

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A system had to be devised which, on the one hand, would make visual detection of the installations difficult if not impossible and, on the other hand, would just permit traffic operations without the hazards of accidents.

The provisions of two stages of blackout, namely, "Limited Blackout" and "Complete Blackout" also applied in the case of railroads. For details on this subject the reader is referred to the "Eluri" plan, Items 51-61 in the Karlsruhe Document Collection.

In all other respects the general directives governing blackout requirements applied also to railway operations.

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**FIRE PREVENTION AND FIREFIGHTING.** Directives governing the fire prevention and firefighting measures to be taken as part of passive air defense in railway operations are contained in Annex 2 of the "Eluri" Plan (Karlsruhe Document Collection).

Since the transportation of flammable fluids was an important part of the rail transportation missions and involved increased fire hazards, special directives were issued governing the storage of such freights. These directives dealt also with such subjects as pipe lines, above and below surface

354. See VIII, c, below.

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storage, and splinter protection.

BUILDING CONSTRUCTION MEASURES. Special passive air defense measures of building construction were necessary to provide protection for

elements of vital importance for railroad operations;

command posts for the control of passive air defense activities;

personnel, particularly those organized for passive air defense activities;

the general public while travelling by rail.

The construction of air raid shelters and the provision of protection against splinters were governed by the general directives issued on these subjects.

356  
THE RAILWAY PASSIVE AIR DEFENSE AUXILIARY SERVICE. For the repair of damage done by air attacks a special Railway Passive Air Defense Auxiliary Service (Eisenbahnluftschutzhilfsdienst), known as the Elu Auxiliary Service (Eluhilfsdienst--"Elu" being the abbreviation for "Eisenbahnluftschutz")

*in*  
The service was organized <sup>in</sup> Elu team of one leader and ten men, comprising two gas detectors, two general purpose men, two mechanics, two electricians, and two medical men. These

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teams were under the Railway District Passive Air Defense

355. Karlsruhe Document Collection: "Eluri," Annex 3.

356. See VIII, a, 5, below.

357. Karlsruhe Document Collection: "Eluri," Items 69-75.



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238 Chief and in response to a prearranged code message assembled in shelters prepared for the purpose, where their equipment was stored.

239

THE SELF-PROTECTION SYSTEM IN RAILWAY PASSIVE AIR DEFENSE.

In all official and residential buildings situated on terrain which was the property of the railways, special "Self-Protection Forces" were established, the organization and missions of which corresponded to those of the general self- or individual protection system.

358

EXPERIENCE. The provision of shelter for the travelling public and for the large masses of people concentrated at rail depots at certain hours, particularly in large cities or industrial localities, presented problems which were difficult to solve. The only possibility to find solutions for these problems was through very close cooperation with local passive air defense chiefs of the general passive air defense service, and through special allocations of building materials and personnel for the construction of air raid shelters, which created an important field of work for the appropriate staff sections (Ia op 3) of the various air district commands.

When large-scale damage was incurred on railway terrain the railway management sent to the area its special repair

358. Ibid, Items 76-80.

239 trains held available for cases of emergency. Whenever necessary, support was requested by units of the Passive Air Defense Forces, which, with their repair companies and their special equipment found opportunities for successful action.

After commencement of the phase of large-scale air attacks, it became progressively more and more difficult to maintain railroad operations. Simultaneous-release saturation bombing methods (Teppichabwürfe) caused damage to tracks, for example at marshalling yards, which it was no longer possible to repair completely. This in turn resulted in traffic jams, particularly in the western territories of Germany, with their disastrous impact on the wartime economy.

240 The achievements of the German Railway Passive Air Defense Service merit the highest commendation. Although under excessive strains, lacking adequate rest periods, and ignorant of the wellbeing or otherwise of their families, the personnel employed in the service displayed a keen sense of duty in holding out, and in their devoted efforts did everything humanly possible to accomplish their missions.

3. Passive Air Defense in the German Post and Telegraph Service. The German Post and Telegraph Service had two major missions

(1) The general responsibilities evolving from its

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position as a representative of Government authority in matters of national defense;

(2) The missions evolving from its position as the responsible authority<sup>for the</sup> "postal communications traffic enterprise."<sup>359</sup>

Special passive air defense measures therefore had to be introduced for its protection.

The installations of the Post and Telegraph Service represented a field of activities of vital importance in every walk of life, including national defense, and these installations were exceptionally sensitive to interference. Very careful attention to all installations was an indispensable condition for the smooth functioning of communication services extending throughout the vast areas which had to be served by the service.

From the very start the authorities responsible for passive air defense drew from the above circumstances the logical conclusion that the Reich Post and Telegraph Service must be accorded a special position in the field of passive air defense. For these reasons the Post and Telegraph Service was placed in the "Special Administrations" category as defined in Paragraph 22 of the Passive Air Defense Act.

<sup>358</sup>. Karlsruhe Document Collection: Air Force Field Manual L. Dv. 759, "Richtlinien fuer die Durchfuehrung des Luftschutzes im Bereiche der Deutschen Reichspost (Post-luftschutzrichtlinien--Pluri)."

<sup>359</sup>. See Footnote 346, above, and an Article "Die Reichspost im Luftschutz," by President Delvendahl and Oberpostrat Grottefend.

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The directives issued by the Reich Minister for Aviation and Commander in Chief of the Air Force for the implementation of passive air defense under the authority of the Post and Telegraph Service were contained in the compilation "Post and Telegraph Service Passive Air Defense Directives (Postluftschuttrichtlinien)," which thus became the basis for all passive air defense measures taken by the Post and Telegraph Service.

The directives contained detailed regulations on the following subjects:

The development and organization of forces;

Preparatory Measures in the organizational and technical fields;

Measures to be taken when an air alert was given, during the various stages of alert until the all-clear signal was given, and upon the call out of passive air defense

Special measures for the individual branches of the Post and Telegraph Service, such as the mail service, the postal check account system and offices, and the telegraph system.

The directives were based extensively on laws and acts, decrees in implementation, and instructions generally valid in the field of passive air defense, prescribing special measures only in cases where the special features of the Post and Telegraph Service made this inescapably necessary.

<sup>360</sup>. Karlsruhe Document Collection: Air Force Field Manual L. Dv. 759, "Richtlinien fuer die Durchfuehrung des Luftschutzes im Bereiche der Deutschen Reichspost (Postluftschuttrichtlinien-Flur)."

241           The protective measures taken involved primarily the following:

(1) Buildings and properties on which the offices and other installations of the Post and Telegraph Service were located;

(2) The extensive telephone network, which included underground and open line circuits.

242           The protective measures taken for buildings and real estate were adapted to the size and importance of the target to be protected. In the case of small offices passive air defense measures on the scale of the self-protection system were adequate. More important offices adapted their passive air defense measures to the pattern of the extended self-protection system or to that of the factory air defense system. Very small offices and postal agencies, hundreds of which were to be found in any of the larger cities or towns, where they were located in rented premises side by side with other official or private agencies, had to integrate their passive air defense measures with those of the passive air defense communities on such properties.

In large offices of the service passive air defense was a responsibility of the postal employees, some of whom received training in the passive air defense schools of the Post and Telegraph Service and some in installations of the Reich Passive Air Defense Society.

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These passive air defense forces were amply supplied with equipment in order to enable them to combat small and medium size fires without outside support.

Adequate shelter space was provided for the protection of any of the public present on the premises during an air attack and for all employees. The basic rule here was the same as in all other cases, namely, that everyone present within a building had to enter the air raid shelters, the only exception being employees who were required to continue their duties even during an air attack.

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Extensive preparations had been made to insure that operations could continue even when damage was incurred. These precautions were particularly thorough in the case of the telephone and telegraph equipment, and considerable expenditures in man power and materiel were necessary to prevent any lengthy disruption of the telephone and telegraph services after air attacks.

Protection of the open wire and underground cable systems against air attack presented very serious problems for the Post and Telegraph Service, since it was practically impossible to achieve complete protection for the many thousands of miles of underground cables and open wire sections making up the trunk lines. For such complete protection it would have been

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necessary to place all lines and all installations underground. The danger existed that the telephone and telegraph system could be damaged more or less seriously in any large-scale air attack.

The only possibility to prevent interruptions of long duration was, in practice, the organization of a well prepared repair service. The problems involved here had to be solved by the various telegraph offices. The personnel employed in the repair of damages had frequent opportunities to prove their willingness and their capabilities during and after air attacks.

Units organized from post and telegraph personnel were even capable of successful action against large size fires, and in all cases interruptions in the telephone and telegraph services were remedied very speedily.

The experience gained in air attacks was continuously processed, examined, and revised to improve the system of protection.

The result of all the activities described above was that the communications system remained operable, generally speaking, in spite of constant air attacks. Every increase in the intensity or change in the methods of enemy air attacks was countered by the increased or modified methods of protection employed by the Postal and Telegraph Service.

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4. PASSIVE AIR DEFENSE IN THE REICH AUTOBAHN SUPERHIGHWAY CORPORATION.

The Reich Autobahn Corporation was a "Special Administration" as defined in Paragraph 22 of the Passive Air Defense Act.

Passive air defense here involved three groups, each of which required basically different treatment:

(1) Passive air defense within administrative buildings not situated on the superhighways;

(2) Passive air defense in labor camps at sites of construction;

(3) Passive air defense along sections of the superhighways open to traffic.

Ad (1), above: The passive air defense measures required here corresponded to those required by Air Force Field Manual L. Lv. 755: Directives for the Extended Self-Protection System (Richtlinien fuer den erweiterten Selbstschutz).<sup>361</sup>

Ad (2), above: In labor camps at ~~KMIXXHX~~ construction sites passive air defense was regulated, on the basis of instructions dated 4 January 1941, in accordance with the directives for the Extended Self-Protection System in cantonment type settlements.

In seriously threatened areas particular emphasis was <sup>361.</sup> See IV, a, above.



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244 placed on camouflage and blackout activities. The cantonment type buildings were established in irregular patterns in wooded areas and forest plantations. Each camp had a cave-type air raid shelter and two special ponds for firefighting, besides a number of wells for the same purpose, with motor-driven pumps.

In each camp the camp commandant was at the same time the passive air defense chief.

Because of the large number of persons present in the camps at night, most of the camps had direct communications with the nearest air raid warning detachment.

Ad (3), above: Passive air defense measures for the Reich Autobahn superways themselves had to be different from those for the railway service, because the Autobahn Corporation had no public transportation facilities and was responsible only for the maintenance of its highways.

The regulations governing passive air defense on the Autobahn superhighways were consolidated in Air Force Field Manual L. Dv. 760.

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245 The organizational pattern for operations on the Autobahn provided the necessary basis for the passive air defense regulations. Each section of the superhighways, between 30 and 362. Not available at writing.

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245 42 miles in length, was under the supervision of a section management, with offices situated approximately in the middle of the section. These offices included an administrative building with the actual office premises and personnel quarters; a vehicle shed for cars and trucks, snow plows, road sweeping machinery, etc.; a storehouse for equipment; a carpenter, painter, and motor vehicle repair shop; a few dwelling houses; and a sand silo.

Gasoline stations, rest houses, and emergency assistance posts were situated at intervals between 12 and 24 miles along the route.

A number of these section managements were grouped under a Chief Construction Office. Each such Chief Construction Office was the local District Passive Air Defense Headquarters, headed by a District Air Defense Chief. These headquarters supervised implementation of the passive air defense measures enumerated under (1) and (2), above.

Each such district was subdivided in sections, which corresponded to the areas of the individual section managements. In each such section the head of the section management served as the section passive air defense chief.

Within the areas under its authority, the Autobahn Superhighways Corporation was responsible for all passive

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245 air defense measures. The local organs of the corporation cooperated closely with the local passive air defense chiefs in the areas to which they were adjacent.

Damage to the Autobahn was reported to the appropriate air district command headquarters, to the transportation staff officer of the appropriate corps area command headquarters, to the Roads Commissioner, and to the Inspector General of the German Road System. These reports were channelled through the appropriate Autobahn district passive air defense chief.

246 Preparatory measures for the repair of damage were so arranged that the damaged sections could be closed to traffic, traffic could be rerouted, and the damaged sections could be restored to operability within the shortest possible space of time. For this purpose an emergency team was stationed at each section management office. Together with the guard personnel at the outside stations this team provided the road supervision and road block service under control by the section management chief. When damage was reported the team proceeded to the damaged point, taking along all necessary tools and equipment, closed off the damaged section and, whenever possible, rerouted traffic, using one lane of the undamaged side of the highway. If both sides of the superhighway were damaged, traffic was rerouted by the various state and local roads. In many cases

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246 these measures were taken while the enemy planes were still attacking.

While the above measures were being taken, repair gangs, repair material, tools, and equipment were being moved to the damaged section, so that repair work was frequently in full swing within one or two hours after the bombing. The repair materials constantly in use, such as earth, stones, gravel, etc, were stored at various points along each section, so that transportation requirements were limited.

In most cases the damage involved only either one or both sides of the roadway; bridges were rarely struck by bombs. Full hits on the road surface usually created craters between 12 and 16 feet deep and between 24 and 33 feet across. Furthermore, the roadway in a circumference of approximately 100 feet was usually raised or cracked.

Due to the excellent organization and the vigorous action taken by the repair gangs, damage of this type was usually remedied within three days at the longest. In all cases it was possible to maintain the flow of traffic by some means or other. This gave the public the impression that the Autobahn superhighways were proof against the effects of air attacks.

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Special telephone networks were available for the speedy transmission of reports and orders. The District Construction headquarters, section managements, gasolins stations, rest

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247 houses, emergency assistance posts, and approach outlets were connected with this telephone network.

The District Construction Headquarters and most of the section managements had direct lines to the general air raid warning service. When planes were reported within fifteen minutes flight time, the section managements alerted all gasotti line stations, rest houses, and emergency assistance posts, all of which had warning equipment, so that precautionary measures could be taken at once.

Relay of the warnings to persons using the superhighways was prohibited. At the approach outlets yellow-blue-yellow warning signals were hoisted during daylight to give the air raid warning. The signal consisted of a sphere on top of a cylinder two meters in length. At night the warning was given by means of yellow-blue-yellow flash signal lights. The day and night warning signals were placed on the center strip where they were clearly visible. In addition to the above, the local passive air defense chief posted guards at the ~~XXXXXXXXXX~~ ~~XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX~~ entrances to localities to warn all vehicles coming from the superhighways when the alert had been given.

During alerts traffic continued uninterrupted on the autobahn superhighways, with the proviso that vehicles were to travel

248 at intervals of between 220 and 330 yards. If an air attack was imminent, a fact which could be recognized from anti-aircraft fire, the burst of bombs, the presence of flare bombs, etc, all vehicles were required to park at the extreme edge on the right side of the roadway, as far as possible from over- and underpasses, and with their parking lights and dimmed rear lights burning in addition to a blue identification light. Vehicles left in parking lots were to show no lights at all. All persons were to leave their vehicles and proceed to air raid shelters or shelter trenches, which were made easily identifiable by signs.

Posters displayed at all gasoline stations, rest houses, and emergency assistance posts informed all travellers of the action they were to take in the event of an air attack.

The management of the Autobahn superhighways system did everything possible and conceivable within the scope of its missions to reduce the effects of air attacks to a minimum. Among other uses, the superhighways served as approach routes for the motorized passive air defense battalions, facilitating the speedy movements of these battalions from distant stations to a major damage control area.

##### 5. PASSIVE AIR DEFENSE IN THE REICH LABOR SERVICE

As a "Special Administration" in terms of Paragraph 22 of

248 the First Decree in Implementation of the Passive Air Defense Act, the Reich Labor Service organization carried out its passive air defense measures on its own responsibility in consonance with the directives issued by the Reich Minister for Aviation and Commander in Chief of the Air Force.

In line with these directives the organization had even before the war compiled its own Passive Air Defense Regulations which were supplemented and adapted during the war to current experience and the needs which became evident.

The organizational measures taken comprised the planning, preparation, and execution of appropriate measures in all billets, installations, and establishments of the service.

249 Each provincial and district leader of the labor service was responsible to the Commander in Chief of the Reich Labor Service for the proper implementation of all passive air defense measures within his or her area of command. Since the whole passive air defense system was to form one homogeneous whole, each labor service leader at lower levels was required to cooperate with the appropriate local passive air defense chief, the appropriate agencies of the Reich Passive Air Defense Society, and the factory passive air defense agencies of the Reich Board of Industries.

Each labor service passive air defense unit, which in the case of large size labor service service stations was

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249 sub-divided during operations into operational and replacement echelons, was under command by a passive air defense chief who was appointed specifically for each station by the local labor service leader or chief.

Within installations of the labor service the passive air defense units were organized in specific functional groups, such as passive air defense police and cordon teams, fire guard and firefighting teams, medical teams, repair teams, and decontamination teams.

The technical measures taken varied in the various establishments in accordance with the nature and size of the establishment concerned. In all passive air defense measures taken, the Reich Labor Service had to give special consideration to its camps of timber structures. For this reason all labor service passive air defense units had equipment specially adapted to the requirements for protection of wooden structures.

In addition to such equipment, larger billet establishments and other installations had portable motor pumps with a corresponding supply of hoses, and foam fire extinguishers. Against the eventuality of any failure of the water mains, special ponds and wells were available to supply water for fire control purposes.



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Because of the extreme sensitivity of camps of wooden houses to air attack, great importance was attached to camouflage and concealment.

In almost all cases wooden structures lacked cellars which could have been improved to serve as air raid shelters. Therefore, the general rule in such camps was to have improved shelter trenches. As a rule the shelter trenches provided in the Reich Labor Service had a protective frame of timber reinforced with timber bores or concrete angles. Usually, the trenches were constructed away from the billets but so located that they could be reached speedily. Special shelters, and quite frequently concrete bunkers were provided for fire guard and observer personnel. The passive air defense measures taken in the Reich Labor Service proved sound both in the zone of interior and in the field during the war and under combat conditions.

Temporary shelter trenches were always constructed immediately wherever personnel went into quarters. Tent camps were always set up in dispersed order and at a safe distance from important traffic centers.

The use of 4-man tents with ample splinter protection practically averted casualties due to bomb fragmentation and/or weapons fire.

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When necessary, units of the Reich Labor Service were employed in the zone of interior for damage control operations. The units thus employed were assigned specific missions to be executed under the command of specially trained officers.

All official sources, and in particular the general public, appreciated and applauded the work done by Reich Labor Service units in damage control operations after air attacks.

The Reich Labor Service not only supported the military forces in all theaters of operations, but also did its self-understood duty in the zone of interior in the field of passive air defense.

#### 6. Passive Air Defense of Ports, Waterways, and Ships.

aa. Passive Air Defense in Ports. The geographical location and the natural features of port areas resulted in an increased degree of sensitivity to air attack. The fact that the places of work and the residential quarters were side by side, and that large masses of people were concentrated in the immediate vicinity of large port areas made passive air defense a particularly complicated matter. Conditions such as these tended to favor the spread of fires and the hazards

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of panics.

The port passive air defense system was designed to

363. See Footnote 346, p. 274: Der Luftschutz grosser Hafengebiete, by Senator Richter.

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251 reduce the effects of air attacks directed against port installations, and to insure speedy support of all installations and ships within a port if their own protective facilities were inadequate. Particular prominence was given here to the necessity to maintain the capabilities of vitally important military and other port installations.

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In addition to the above, the port passive air defense system was to provide protection for all personnel employed on shore or afloat within the port area.

The system had to be so organized and equipped that disturbances could be remedied before they could affect port operations on a larger scope.

The scope of the passive air defense measures required in individual ports had to be adapted to their importance in the traffic and communications system as a whole, and to their degree of sensitivity to air attack.

The port passive air defense system was a component of the "Safety and ~~XXXXXXXXXXXXXX~~ Auxiliary Service," later of the Passive Air Defense Police, and thus was under the control of the local passive air defense chief.

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In all ports at which regular waterways police were

364. Karlsruhe Document Collection: "Luftschutzdienst in Häfen, auf Wasserstraßen, und auf Schiffen;" Air Force Field Manual L. Dv. 757.

365. See III, c, 3, above.

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252 stationed, the direction of the actual <sup>passive</sup> port/air defense activities was a responsibility of the local Chief of Waterways Police, in other cases this responsibility was vested in the port or appropriate waterways administration authorities. All port installations and the whole port area, including shore installations, such as quays, sheds, rail tracks, etc., were uniformly organized for passive air defense purposes; the boundaries of the port area were defined in mutual agreement by the parties concerned. Large port areas formed what were called in each case a "Port Passive Air Defense Sector." In the case of smaller port areas it was sufficient to establish a "Port Passive Air Defense Precinct."

The forces available for port passive air defense were as follows:

(a) On Shore: Units of the Safety and Auxiliary Service, later, the Passive Air Defense Police;

Specialist Port Construction Teams who handled the repair of damaged hydraulic and loading installations.

(b) Afloat: Waterways (Port) Police units, responsible for the warning service, the reporting of damage incurred, and traffic regulation;

Salvage and Rescue Units comprising each one or more teams with the mission of rendering first aid, of preventing the blocking or partial blocking of navigable channels by non-maneuverable vessels, and of carrying out immediately the most urgent repairs to damaged vessels.

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(c) Fire-fighting forces comprising all available fire boats and auxiliary fire boats.

(d) Salvage and rescue forces which could be re-  
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quested by the Waterways Administration if needed.

Special measures were necessary in port areas for each of the various stages of warning reports. In the case of an acute air raid warning the signal was given by means of special flags, for example, and all ships were required to relay the warning.

The organization described above proved sound in practice, and no important changes were found necessary during the war. In addition, special arrangements in accordance with local conditions were made in the case of large ports.

In Hamburg with its large shipbuilding yards and granaries the personnel available were naturally inadequate in the case of major attacks. There was also no practicable possibility to immediately move in reinforcements. By means of the fullest possible use of the available forces, however, it was nevertheless possible to prevent or remedy at least some of the damage. The units of the Passive Air Defense Police employed for such purposes rendered particularly valuable services. Among other missions, they were employed to assist in the salvage of vitally  
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important cargoes from burning ships.

366. Air Force Field Manual L. Dv. 757, Paragraphs 23 and 73--  
see Footnote 364, above.

367. Ibid, Paragraphs 38-51.

368. See Footnote 441, below.

253 In Duisburg-Ruhrort port, the largest inland waterways port of Europe, special measures were taken because of the large areas and intricacies of the installations. The main purpose of these special measures was to insure uniformity in the direction and execution of operations. Here, command over the port passive air defense command was vested in a high ranking construction official (Saurat) of the port administration, who also was at the head of all forces of the waterways passive

254 air defense units and of the units of the extended self-protection system. This consolidation of all passive air defense forces under one uniform control proved a particularly fortunate solution and served excellently in the execution of all passive air defense activities, and particularly in the case of damage control operations.

Quite apart from the fact that this arrangement from the outset prevented conflicting jurisdiction, the port sector commander was able always to assign the passive air defense forces in the damage control action he considered currently most important, without any regard for the problem of who had authority over them, or whether they were intended for employment in the area or duties involved.

One big disadvantage which became evident in inland waterways ports was the lack of heavy salvage equipment. The

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369. See Footnote 90, above.

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255 necessity to hire such equipment from case to case resulted in a serious loss of time.

By reason of the fact that the port, for passive air defense purposes, was under the control of the local passive air defense chief, it was possible in the case of particularly heavy attacks to immediately assign supplementary forces. On the other hand, units of the port air defense system could also be employed in damage control action outside of the port area. The use of fire boats at water supply points, for example, gave excellent results. In like manner, these boats rendered excellent services in the case of fires at large oil tanks along the banks of the Rhine River.

Special mention is due to the very small fire boats. The fact that they were so small and maneuverable enabled them to approach all damage points within the port area and in the canals, even if obstacles were encountered in the immediate vicinity of the property damaged. Many fires were successfully checked on ships and in houses and other buildings by the use of these small boats.

It is sound practice to equip small boats of this type with outboard motors for use as medical boats. The larger types of boats are too hard to maneuver; if there is any damage along the route to the area of damage control

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action currently most important, it is difficult for them to move to the immediate vicinity of the currently most important point, for which reason it is exceedingly difficult for them to take aboard injured personnel.

The very small boats described above rendered particularly valuable services both in fire control action and as medical units in large cities intersected by canals.  
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These small boats were developed under the Reich Minister for Aviation and Commander in Chief of the Air Force on the basis of experience gained in air warfare, and proved exceptionally useful wherever they were committed.

bb. Inland Waterways Passive Air Defense. The term waterways as used here includes all natural and ~~XXXXX~~ manmade navigable channels. At all transshipment stations along any waterway the passive air defense measures had to be taken which were prescribed in the regulations for waterways passive air defense.

Basically, the missions in waterways passive air defense were the same as those of port passive air defense.<sup>371</sup> These regulations were contained in Air Force Field Manual L. Dv. 757.<sup>372</sup>

370. See Footnote 90, above.

371. See ~~XXXXXXXXXX~~ IV, f, 6, above.

372. Ibid, and Footnote 364, above.



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The responsibilities in waterways passive air defense extended not only to the actual water channels, but also included shore installations, river constructions, etc., insofar as they were supplementary to the waterways system, furthermore, all installations serving waterways operations (lock installations, weirs, anchorages and wharves, administrative and other buildings, shipyards, construction yards, etc).

The scope of the measures to be taken depended basically on the importance of the waterway concerned as a traffic channel, and on the degree to which it was sensitive to air attack. The various air district commands supervised the preparations and execution of the required passive air defense measures. In the case of sea channels, responsibility rested with the naval post commands.

#### THE DIRECTION OF WATERWAYS PASSIVE AIR DEFENSE

The Waterways Administration was responsible for all inland waterways, acting in agreement with the locally appropriate transportation headquarters. The Waterways Administration was also responsible for sea channels, acting here in agreement with the appropriate naval post or naval fortifications headquarters.

Usually the passive air defense system for inland waterways and sea channels within a specific area was directed by  
 373. "Der Luftschutz grosser Hafengebiete," Paragraphs 69-70;  
 See Footnote 363.

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one Waterways Passive Air Defense Directorate. Usually, this area was defined as one specific inland or sea waterways route.

When a waterway passed through a Category I Passive Air Defense locality in which a port passive air defense command existed, the local sections of the waterway were placed, in agreement with the military branches and other central authorities involved, under the local passive air defense chief.

Special bulletins were published for ship captains and pilots; these bulletins contained summarized information on the local signal arrangements, on the local waterways passive air defense precincts and sectors, and other similar items.

#### WATERWAYS PASSIVE AIR DEFENSE FORCES

Each Waterways passive air defense sector had at its disposal operational and standby units comprising

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Police forces

Salvage forces

and if necessary waterways firefighting and rescue forces.

The missions, composition, and equipment of these forces corresponded essentially to those of the port passive air de-

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fense forces.

The police forces were an element of the waterways safety service. The salvage units had standard light salvage equipment comprising crane boats, tugboats, and medical boats, etc.

374. See IV, f, 6.

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257 The Waterways Administration was responsible for the removal of major obstacles to shipping.

The technical preparations made involved

On Shore: Protection of vitally important installations, such as lock installations and operating plant; the provision of air raid shelters; and development of the reporting and signal communications network.

Afloat: The development of supplementary canals, bypassing or rerouting facilities, emergency anchorages, route marking by means of illumination, the placement of buoys, and light houses.

Special regulations governed the movements of ships when warning reports were received.

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In addition to the forces stated above, the waterways passive air defense system had special waterways air observers.

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Passive air defense for the locks, shiplifting devices, and other installations supporting ship movements in canals presented very especial problems. Camouflage could do little

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258 to help here.

To protect locks, it was found sound practice to place them under water during periods of imminent air threat. During massed air attacks towards the end of the war it was no longer

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possible to maintain shipping operations.

375. Air Force Field Manual L. Ev. 757, Paragraphs 98-105.

376. Ibid, Paragraphs 107-108.

377. See VIII, d, below.

378. Appendix 26: Air Photo (Der Mittellandkanal bei Gravenhorst--1945).

258

The organization proved sound on the whole. Items of experience in the technical fields were processed and exploited by the appropriate authorities.

cc. Passive Air Defense on Ships. Initially, the requirements of Air Force Field Manual L. Dv. 757 also applied for passive air defense on ships.

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The ruling principle was: Every ship must be in the position to take initial steps to help itself in any situation.

If a ship was unable to master an emergency with its own facilities and personnel, it could require support from the port and waterways passive air defense systems provided

(a) the damage on the ship constituted a threat to that ship's surroundings;

(b) failure to bring the damage under control could cause serious interference with shipping traffic;

(c) human life was endangered;

(d) action was necessary to protect cargoes of importance for the war economy.

Each ship captain was responsible for the direction and execution of all passive air defense measures on his ship.

For each seagoing ship the owner was required even during peace to maintain a "passive air defense personnel roster." This roster also had to be maintained current on the ship.<sup>380</sup> Special

379. See Footnote 364, above.

380. Appendix 5: Air Force Field Manual L. Dv. 757. See also Footnote 364, above.

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259 instructions were issued on this subject, and the crew of each ship had to be assigned their passive air defense duties and given appropriate training in accordance with the roster.<sup>381</sup>

Technical preparations for passive air defense on ships involved the following:

On Board seagoing ships: blackout measures, signal equipment, supplies of leak repairing materials, fire fighting and decontamination facilities;

On Board inland ships : as above plus medical equipment.

From the moment when passive air defense was called out, special regulations were applicable for the behavior of all ships.<sup>381</sup>

The legal basis for passive air defense on board ships was provided in the Statute on Passive Air Defense on Board Ships (Verordnung ueber den Luftschutz auf Schiffen), as promulgated in the official notice of December 1943.<sup>382</sup> In consonance with the requirements of Air Force Field Manual L. Dv. 757 the statute dealt with the direction and execution of passive air defense measures on board ships, the requirement of mandatory passive air defense service by crew members and their proper passive air defense behavior, the action to be taken in

<sup>381</sup>. Ibid, Paragraphs 126-142.

<sup>382</sup>. See published text of "Luftschutzrecht," p. 214.

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the case of serious damage to waterborne traffic installations or craft, and with the authorities involved and the authorization to issue directives in this field.

The organization adopted for passive air defense on board ships proved sound, and no basic changes were found necessary during the war. This can be said in spite of the fact that in the final phases of the war the forces available were no longer able to cope fully with the mission of damage control or of speedily remedying damage incurred. On the whole, cooperation between the various authorities involved was without friction, and the personnel employed expended every effort in their devotion to duty.

The technical experience gained will be dealt with separately in the proper place.

In the case of ports located within the confines of naval fortification areas it is only natural that responsibility for the organization and direction of passive air defense rested with the Navy. Wilhelmshaven is mentioned here as a typical example. Because of the knowledge of seamanship required, the direction of passive air defense in that port was a responsibility of the managing director of the equipment department and of waterborne traffic, a high ranking staff officer. Organizationally, the whole passive air

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260 defense system was under the shipyard passive air defense chief, who in tactical matters acted independently but nevertheless in close cooperation with the local <sup>passive</sup> air defense authorities.

The following passages are quoted on the subject of experience in the shipyard and port passive air defense services of Wilhelmshaven:

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Owing to its significance as an establishment of the military economy, the naval shipyard of Wilhelmshaven was a popular target for enemy airmen from the first to the very last day of the war. In all the attacks which occurred during roughly six years of warfare, only approximately 650 lives were lost in the township, the shipyard, and the port areas. This small number of casualties was due not alone to the excellent protection provided in bunker type shelters, but primarily to the excellent passive air defense discipline of the whole population. Mention must also be made here of the smooth cooperation with the local passive air defense authorities, developed through past passive air defense exercises and through close personal contact with the leading personnel of the shipyard, the police forces, and the civil air defense authorities.

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Extremely close cooperation was evident, for example, in the movement of the large masses of working personnel, to and from work, through the various town districts and through the gates of the shipyard. The start and close of working shifts was staggered for the various works, so that all danger of any jam resulting in overcrowding of air raid shelters in the event of a sudden air alert was averted. This measure proved very valuable, since various attacks staged to strike the area at the start and/or close of working shifts achieved only very small results.

As a result of precautionary advance planning, suburban settlements had been developed from 1937 on, so that the town areas were less crowded. Five thousand homes for employees were built in these settlements by the end of the war, so that substitute quarters were available for the numerous persons who were bombed out of their homes in the town areas, where roughly 75 percent of all residential quarters were destroyed.

Time and again the personnel employed had occasion to observe and realize that care was taken to provide for them and their families.

383. In "Werft- und Hafenluftschutz," by Karl Kramp, Wilhelmshaven; published in "Ziviler Luftschutz," Vol. 6 and 7-8; Gasschutz und Luftschutz, Koblenz, 1955.



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This was what made it possible to withstand the immense nervous strain and still achieve performances from the working population.

.....we placed our fire guards under bunker protection and in their place trained rapidly mobile firefighting teams, which rendered excellent services. All personnel employed were required to serve their turn at intervals of between six and eight days as passive air defense guards irrespective of their rank or position. This service was required from the highest official as well as from the lowliest artisan, so that between 900 and 950 guards were available each night for any emergency.

g. Organisation Toot and Excavator Regiments in the Passive Air Defense System. Mass bombing and the simultaneous-bomb release saturation bombing methods employed against towns created new missions in the field of damage control activities for the passive air defense forces as an element of the overall air defense system\* The combined effect of explosive bombs of up to the heaviest types dropped together with incendiary bombs with all technological refinements was so terrific that veritable mountains of smoldering debris

384. See IV, 1, below.

\* The reader's attention is drawn again here to the different terms in German: "Schutz" in the sense of protection, and Verteidigung in the real sense of defense.

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and burning ruins frequently blocked the approaches to air raid shelters. It was an infinitely difficult task to remove these obstacles, and owing to the limited forces available in the passive air defense police and the other passive air defense forces, help often arrived too late in spite of all efforts.

For the above reasons and due to the forceful initiative of the Interministerial Air-Attack-Damage Control Committee (Interministerielle Luftkriegsschadensausschuss)<sup>384</sup> a number of Excavator Regiments were activated with cooperation from the Commissioner General for Building Construction (Generalbevollmächtigter fuer das Bauwesen). These regiments carried along all equipment required in operations to rescue persons buried under debris and to remove debris.

In addition, a number of Organisation Todt regiments were organized in order to have adequately numerous personnel available at all times to accompany the excavator regiments. These regiments were only organized after the Organisation Todt had accomplished its missions at the Channel coast.

Finally, a "Miner Regiment" (Bergmannsregiment) was in process of activation for the purpose of consolidating the various special rescue teams already in existence.

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As a support force for passive air defense operations

<sup>384</sup>. See IV, 1, below.

263 Organisation Todt Regiment "Speer" was first organized in western Germany. This represents the first attempt in the field of debris removal and rescue activities to exploit all experience available for the purpose of so equipping a force with the most up-to-date facilities, primarily with heavy excavators, that it would be able to cope with even the most difficult tasks. However, this force also had to be made so mobile that it could whenever desired be moved speedily to the very center of an area under attack.

In the above sense, the Organisation Todt Regiment was to be developed into what might be called a heavy weapons unit of passive air defense, side by side with the Repair Service and the motorized passive air battalions, under control by the local passive air defense chief.

This regiment was a creation of the Organisation Todt. Together with the National Socialist Motorist Corps ~~XXXXXX~~ Transportation Group "Speer" (Nationalsozialistisches Kraft-fahrer Korps-Transportgruppe Speer) this regiment applied itself to its new mission and organized a unit initially designated Organisation Todt Excavator Regiment (OI-Bagger-Regiment), comprising four technical battalions, all uniformly equipped with salvage and rescue facilities, for operations in the Rhine-Westphalia industrial region.

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Each battalion included a medical platoon under an experienced medical practitioner. In addition, the regiment had as its fifth major unit a super field kitchen battalion with large stationary and mobile field kitchens to feed the civilian population of towns stricken by air attacks.

The principles underlying the activation and training of this new passive air defense support service were threefold:

- (1) The use of the most up-to-date equipment;
- (2) The use of expert personnel to handle such equipment;
- (3) Effectiveness through mobility.

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Operations with all this equipment were predicated on the excavator, which was the "heavy weapon" of the regiment. Prior to this the central directorate of all passive air defense organizations had instructed the local passive air defense chiefs in localities stricken by air attacks to apply the law governing the confiscation of property and services for defense purposes and make use of excavators available in the building construction industry.

Duesseldorf had been the first town to organize an excavator service, but only on a local scale, since the necessary conditions were lacking to organize such a service above the local level. The only possibility to create these conditions was through the activation of a force specifically trained for the purpose and equipped accordingly.

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All types of excavators were in use in the Organisation Foot Regiment for the various purposes for which they were intended. Power grab shovels, because of the possibility to lower the shovel from above into masses of debris, proved particularly useful in clearing subsurface premises, such as destroyed cellars, with their accumulation of bulky material, such as planks, beams, iron girders, and so forth. Bucket-type power shovels, on the other hand, proved indispensable in clearing rubble from streets or in opening passages to damage control points because of their much faster speed in operations.

Following the pattern of the repair service units and the motorized passive air defense units, the regiment was assigned among other items of <sup>small</sup> equipment, such as pointed shovels, double-bitted pickaxe, mattoxes, hammers, axes, saws, etc., a mobile diesel-engine-driven compressor for the operation of pneumatic hammers used to break through walls and pneumatic drills to create small airholes. For the removal of large masses of rubble use was made of electrically or compressed-air driven scraper conveyors taken from the mining industry. These proved particularly useful when it was necessary to start rubble clearing operations at the base.

Diesel-engine-driven electricity generator unit of capacity up to 25 kW served to supply the necessary current to operate the scraper conveyors and at the same time enough elec-



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265 electricity for the lights at one or two additional construction sites. Smaller, gasoline-engine-driven generator units of up to 1.5 kW were used when only lights were needed. When it became necessary to pump air for persons buried under the ruins in order to keep them alive until rescue operations could commence, and when this had to be done with speed, or in cases when some other means of communications had to be created, large size drilling machinery, so-called scraper drills (Schürftörgeräte) was used.

To complete its heavy equipment, the regiment had acetylene cutters to remove metal obstructions, and diaphragm pumps to pump out cellars.

In order to insure that all of this equipment would be used to full capacity and with any hope of success another requirement had to be met: the equipment had to be handled by expert personnel, again following the pattern of the repair service units and the motorized passive air battalions, where men from the Technical Emergency Corps (Technische Nothilfe) and skilled artisans formed the hard core of each unit.

The proper expert personnel for these operations were to be found among miners, and in particular among the mine rescue personnel. It is clearly obvious that their normal vocation made them appear particularly suitable for service in the

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Organisation Todt Regiment, since the primary mission of this force was to be the rescue of persons buried alive under ruins. In many cases the only chance for success, meaning the recovery of persons in time to save their lives, was to use experienced expert personnel working with appropriate caution and equipped all necessary technical means.

These technical specialists were supported by men from the National Socialist Motorist Corps, and other Organisation Todt personnel who were employed at other tasks.

The third factor to insure successful operations by this passive air defense force was that of speedy action due to high mobility and flexibility. This applied in particular to the heavy equipment. Normally, an excavator can move about at a working site, but under its own power it cannot travel faster than between 1.5 and 2 miles per hour. This was too slow for operations away from its station, so that the excavator had to be trucked to where it was needed. The necessary transportation was available in the special heavy transportation units (Einheiten Spezialschwerlastfahrzeuge) in the form of flat-bed trailers with powerful tractors which could travel approximately nine miles per hour in level terrain with their load. This speed was adequate to give the excavator an action radius of up to 150 miles. To handle all motorization problems



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each battalion of the regiment had a National Socialist Motorist Corps company with an adequately large motor pool and adequate personnel.

Since the three stated requirements, namely, modern equipment, expert personnel, and high mobility, were thus fulfilled the conditions were created under which it would be possible with the support of an additional specialized passive air defense force to successfully master even the most difficult situations in the field of rescuing persons buried under ruins.

The successful recovery of persons still alive was considered the crowning glory in all operations. Just as was the case in operations by the motorized passive air defense battalions and by the passive air defense police, all members of the Organization Todt considered this mission as their highest target and it can be said to their credit that they achieved many a proud success in this field.

The experience gained in the operations of special excavator units in the Rhine-Westphalia industrial region, serve <sup>385</sup> as justification for the demand that similar specialized units, also organized on a military pattern, should be established in the future. If they are stationed in a decentralized pattern, signal communications must be arranged to insure <sup>385</sup>. See VIII, 5, below.

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287 their speedy commitment, even in areas outside their station areas. In the last phases of the war individual battalions of the excavator regiment were also stationed in especially endangered areas of Germany, such as southern Germany and Berlin, where they were employed with success.

The actual operations, which commence with the departure of a unit from its station and reconnoitering activities by its command personnel proceeding ahead to the scene of operations, and include the arrangement of command channels at the scene of operations were subject to the same regulations in force for the passive air defense troops. 386.

So far as equipment is concerned, it would appear wise to give each unit mixed equipment which would be employed by different methods. 387

h. Passive Air Defense in the Electricity, Gas, and Water systems.

1. The Specialized Services. In passive air defense for public utilities installations it was necessary to differentiate between the following:

- a. Passive air defense for the works, installations, and overland supply lines;
- b. Passive air defense measures to insure the maintenance of supplies and services within individual passive air defense localities.

The measures introduced in the case of (a), above, and the

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experience gained in this field have already been discussed in the chapter on the factory air defense system.

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Specialist Teams were organized to handle the missions under (b), above.

#### SPECIALIST TEAMS

The composition and organization, stationing, and equipment of these specialist teams was governed by the provisions of the Temporary Local Directive for Protection of the Civilian Population against Air Raids, Section XI (Die Vorläufige Ortsanweisung fuer den Luftschutz der Zivilbevölkerung, Abschnitt XI).

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The specialist teams were to confine their activities to the temporary repair of damage done to the supply networks. The final repair of damage to installations after an attack was a responsibility of the repair teams of the individual works.

Initially, the specialist teams were organic to the Safety and Auxiliary Service, and were committed by the local air defense chief or the chief of the passive air defense sector concerned in consultation with the chief of the technical division involved.

At the time when the Safety and Auxiliary Service was absorbed by the Passive Air Defense Police, the specialist teams

386. See V, a-d, below.

387. Polizeioberstleutnant i. R. H. I. Huettner: Erfahrungen im Einsatz von Baggern als schweres Gerat im Bergungsdienst, in Ziviler Luftschutz, Heft 7/8, 1954. Verlag Gasschutz und Luftschutz.

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were excluded from the transfer on the basis of past experience. Instead they were placed under control by the factory defense system of their individual factories, or other installations. This new arrangement proved sound, and cooperation was excellent in all passive air defense localities.

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The establishment and training of the specialist teams was a responsibility of the various municipal corporations in agreement with the several public utility works. Their personnel strength depended on the existing circumstances.

During operations, disruptions of utility services in installations were reported through the passive air defense precinct or sector headquarters if passive air defense requirements made it impossible to use any of the increased number of other reporting centers.

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It was necessary to differentiate between

Specialist teams for the Electricity supply system;

Specialist teams for the gas supply system;

Specialist teams for the water supply system;

Specialist teams for the sewage system.

In areas which were not too large, composite specialist teams were formed. These comprised personnel from the individual works and familiar in each case with the supply system of their works, so that they could carry out repairs to all

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or to any one of the components of the public utilities services.

The specialist teams were motorized and were stationed in air raid shelters at their works. Their training in passive air defense activities was a responsibility of the works involved. Supervision of their organization, equipment, and training was a responsibility of the local passive air defense chief, under whose control the teams were initially assigned.

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Later, these duties were taken over by the local agencies of the factory air defense system under supervision by the local passive air defense chief.

The Reich Minister for Aviation and Commander in Chief of the Air Force (Air Inspectorate 13), acting in agreement with the central authorities involved, issued directives for each branch of the public utilities services. The "Instructions for Passive Air Defense Measures to Insure Protection of the Water Supply Systems (Richtlinien fuer die Sicherstellung der Wasserversorgung im Luftschutz)" is quoted here as an example. Volume 3 of these Instructions dealt with "Passive Air Defense Measures to Insure Supplies of Potable Water

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388. See IV, e, 2, above.

389. A copy of this directive is no longer available.

390. See Footnote 90, above.

391. Director Neubrand: "Aufgaben und Taetigkeit der Fachtruppe" in Knipfer-Hampe, Der Zivile Luftschutz.

392. Karlsruhe Document Collection: Photostat copy of this volume of the "Instructions."

(Luftschutzmassnahmen zur Sicherstellung der Trinkwasser Versorgung)," under the following headings:

The compilation of a plan;

Centralized Water Supply Systems;

Individual local water supply systems;

Emergency water supply systems;

Treatment of poisoned water;

Measures to protect the potable water supply systems in industrial establishments and in establishments of the special administrations.

During the war the specialist teams were frequently supported in repair operations by detachments from the Passive Air Defense Police or by military auxiliary detachments assigned through the local passive air defense chiefs. Support of this type was usually essential after large-scale attacks which caused widespread damage to the widely ramified pipe and wire line systems of the utilities services. As a rule the repair work also took considerable time.

The specialist teams rendered excellent services. However, they were numerically too weak to be able to repair damages as speedily as would have been necessary in the interest of the public and of industry. Good results were obtained under a system in which the specialist teams of various towns rendered each other support during repair operations.

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From past experience, as described above, it would seem necessary to organize considerably larger specialist teams in the future.

2. Passive Air Defense for Valley Dams. As part of the pattern for passive air defense measures to protect power and water supplies against the effects of air attack, thought was also given to the problem of what possibilities existed to safeguard the walls of valley dams, which were hard to conceal by means of camouflage.

The appropriate experts were called in for consultation on the possibilities of finding a technical solution of this problem.

The decisive requirement here, however, was to have a knowledge of what methods and weapons an enemy would be likely to use in attacks against valley dams. That the dams would come under attack was beyond doubt in view of their imminent importance for German industries.

The Reich Minister for Aviation and Commander in Chief of the Air Force (Passive Air Defense Staff) did everything possible to discover the methods of attack which might be employed, but although inquiries were directed repeatedly to the German Intelligence Service no information was forthcoming.

Judging by the status reached in the German development

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of air bombs it seemed safe to assume that the only possible method of attack would be with air torpedos, a view shared by the German Navy. Since air torpedos had to be so delivered that they would travel on the surface of the water in the direction of the dam walls experiments were made at placing torpedo nets in proper position, following the pattern used in the Navy, in certain dams as an experiment. In addition, certain measures were taken to camouflage the dam walls and the electric power stations, although it was surmised that these measures were not likely to produce particularly successful results.

When the British air attack on the night of 16-17 May 1943 struck the Moehne River, Eder River and Sorpe River valley dams with a hitherto unknown type of rotating bomb, the torpedo nets proved useless, since the rotating bombs simply hurtled over them, quite apart from the fact that the installation of these torpedo nets was not completed as yet.

Eighteen Lancaster aircraft participated in the attacks, which were directed against six valley dams. The Moehne River, Eder River, Sorpe River, and Bevertal valley dams actually came under attacks. Two of these attacks caused serious, one slight, and one no damage.

The special bombs used were cylindrical in shape, had a



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diameter of 1.25 meters and a length of 1.57 meters, and were carried broadside to the direction of attack. Just before release, at an altitude of 33 feet, roughly, they were set in rotation corresponding to the speed of the carrying aircraft. The depth setting of the detonation was in accordance with the most vulnerable part of the dam wall, a factor which any expert could determine easily from descriptions and picture postcards

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in general circulation.

In the light of experience the most effective means of protection for valley dams appears to be that of smoke screening over the largest possible areas. The smoke screen must be so dense that the dam walls themselves cannot be identified and must cover large areas upstream and downstream from the actual basin. Since the attacker must approach ~~along~~ towards the precise center of the dam wall in his bomb release run, the smoke screen will make it difficult for him to find his target.

The subject of active air defense at valley dams is not under study here.

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The initial impact was serious in the case of the damage done to the Moehne River and Eder River valley dams. Because of the suddenness of the event, the system prepared to warn the

393. "Die Luftangriffe auf die Moehne-, Eder, und Sorpe-Talsperren 16/17. Mai 1943 und ihre Auswirkungen," by Hans Rumpf in Volume 10, October 1954 of Ziviler Luftschutz, Koblenz. Photostat copy in Appendix 27.

394. Karlsruhe Document Collection: "Reichsluftverteidigung: Der Angriff auf die deutschen Talsperren - 1943 -." From Special Supplies and Procurement Service conference notes, 28 May 1943.

273 populations endangered by the escaping waters failed, so that lives were lost. Economic effects, in contrast, were countered by speedy measures.

In the case of the Mosine River valley dam not only the dam wall, but also the main hydro-electric station and a number of subsidiary electric stations, besides 25 other hydraulic works and a number of filter plants, were destroyed or at least put out of operation. Within the extraordinarily short time of ~~only~~ four months the dam wall was repaired and the damage to the hydro-electric and other hydraulic ~~works~~ installations was so far remedied that the complications were averted which could have been expected in the matter of electricity and water supplies for the Ruhr industrial region.

In the case of the Eder River Valley dam, the damage done by the attacking aircraft was also removed within the same time.

At the same time the following precautions were taken against the eventuality of repeated air attacks with the same type of bombs:

(1) Above-surface nets were suspended at a distance of 500 meters from the dam wall;

(2) A "bomb repeller" was installed in front of the dam ~~wall~~ wall in the form of a timber apron to divert the rotating bombs from the wall;

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(3) Heavy demolition charges were suspended just beneath the water surface to destroy low-flying planes attacking the dam;

(4) Torpedo nets were placed in position on the side from which attacking planes could approach, as protection against air torpedos.

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However, no further air attacks occurred during the war against German valley dams.

The following experience was gained in action to prevent or limit secondary damages, caused by flood waves from the escaping water:

The damage done to the Moskne River valley dam released approximately 120 million cubic meters of water. The flood waters killed approximately 1 400 people and caused considerable damage to property.

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In the case of all important valley dams, experts should therefore be called in to calculate how high the crest of escaping waters would be in a sudden release when the water in the dam is at various levels. Precautionary organizational and technical measures should be based on the figures thus obtained.

Steps should be taken to establish warning detachments at each dam specifically for the purpose of warning the endangered population when necessary. These

396. Footnote 90.

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detachments should have facilities to warn people in the immediate danger zone by means of sound signals, and those farther downstream by means of telephone messages.

Steps should be taken to determine how far downstream the danger will extend. Escape areas should be reconnoitered and the population should be informed accordingly.

Finally, preparations should be made to counter the secondary effects resulting from destruction of a dam, for example on the potable water and electricity supplies, on shipping and other traffic in the endangered areas, and so forth.

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i. Passive Air Defense in Rural Areas. With the opening of air warfare in January 1940 the enemy air forces in their night attacks not only bombed towns and other closed settlements, but also did considerable bombing in rural areas.

Prior to the war it had not and could not have been presumed that rural areas would suffer to such an extent, particularly since no experience whatever was available on this subject.

Experience showed at an early stage that for air defense in rural areas, and thus in Category III passive air defense localities, a pattern had to be adopted which differed from that applied in the case of Category I localities.

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In contrast with a contiguous town passive air locality, where control was relatively easy, a rural passive air locality might include widely separated communities, each of them in turn sprad over a large area, in addition to numerous isolated farms.

Owing to the long distances involved in rural areas and the the general lack of telephone communications, requests to the local passive air defense chief were subject to excessive delays. Furthermore, the passive air defense forces available were almost always too weak in numbers, and the whole situation was still further complicated by the fact that rural houses, sheds, and stables presented far greater fire hazards than was the case in towns.

Full cognizance was taken of all of these factors in the "Directives for Passive Air Defense in Rural Areas (Luftschutz auf dem Lande)" compiled by the Commander in Chief of the Air Force in agreement with the highest national authorities involved and issued on 30 June 1942.

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The person responsible for the direction of passive air defense in rural areas was the appropriate county chief magistrate (Landrat) or, in areas where this applied, the officiating mayor (Amtsburgermeister). Where the local passive air defense chief had an area of authority including localities

357. Karlsruhe Document Collection.

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275 far distant from his place of residence, he appointed in each such locality the mayor or some other suitable person as the community passive air defense chief. This chief was responsible for the preparation and execution of all passive air defense measures within his specific community in accordance with the instructions received from the local passive air defense chief. The authorized community chief was supported by the local fire chief, the head of the local chapter of the Reich Passive Air Defense Society, and the local head of the farmers' organization (Bauernfuhrer), all of whom acted in an advisory capacity unless themselves appointed as local community passive air defense chief.

The community passive air defense chief, as the authorized local representative of the local passive air defense chief had the following missions:

- (1) To decide the subdivision of his areas in local passive air defense communities and specific passive air defense communities.
- (2) To determine in which subdivisions industrial works were to be included.
- (3) To appoint the various passive air defense community chiefs.
- (4) To establish firefighting and salvage and rescue teams.

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(5) To establish the various standby services and service pools.

(6) To insure proper alerting and posting of observer personnel.

(7) To organize a reporting system.

(8) To direct the activities of the various forces during and after air attacks.

(9) To process reports on persons injured and property damaged.

(10) To provide quarters for those rendered homeless.

In addition to the above, he was required to supervise all passive air defense measures taken in his area, such as

(1) Fire prevention.

(2) Blackout facilities.

(3) Passive air defense building construction.

(4) Measures taken under the self-protection system for the protection of animals, forests, tree nurseries, and crops in the field.

(5) Measures to protect agricultural machinery.

(6) Rural gas defense provisions.

Protection of crops in the field, agricultural machinery, tools, etc., was the important mission in rural passive air defense. In agreement with the Reich Minister for Aviation and Commander in Chief of the Air Force

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277 the Reich Controller of Agriculture (Reichsbauernführer)\* and other responsible authorities time and again issued decrees and instructions on the subject of protection of crops against destruction by air attack. These publications included a general decree by the Reich Controller of Agriculture 398 containing instructions, based on the latest experience in the field of air warfare, on such matters as early harvesting, the ploughing of firebreaks (Wundstreifen), and the movement from fields and proper storage of crops.

The highly diversified duties and missions of local passive air defense called for thorough training of the authorized representatives of the local rural passive air defense chiefs. Since rural passive air defense was part of the self-protection system, the Reich Passive Air Defense Society was responsible for this training mission.

In organizing passive air defense in rural areas, the following factors had to be taken into consideration:

Success in damage control action depended on the degree of readiness maintained and on speedy action by the self-protection forces. Therefore, it was necessary on the one hand to distribute the personnel available in such

398. "Richtlinien ueber den Schutz der Ernte vor Vernichtung durch feindliche Luftangriffe," RdErl. des Reichsbauernführers vom 2.6.1943 - II B 3/100/6 MBliv. I. S. 1096). Copy in Karlsruhe Document Collection.

\* The Reichsbauernführer (literally Farmer's or Peasants leader) controlled all agricultural and allied activities, and at the same time was Minister for Food and Agriculture.



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a manner that they could keep all buildings under observation and could commence local firefighting and salvage and rescue operations immediately whenever necessary; this in turn implied that, if at all possible, all employees had to be left on the individual farms, which was advisable anyhow to promote agricultural production. On the other hand, action against large fires and action to prevent disasters required that all forces would be under a single control, in order to make properly planned and instantaneous operations possible.

For the above reasons the regulation "Directives for Passive Air Defense in Rural Areas (Richtlinien fuer den Luftschutz auf dem Lande)" adapted the self-protection applied in towns and established the concept of Rural Passive Air Defense Communities (Landluftschutzgemeinschaften).

Under this system a number of industrial plants and other buildings were grouped together as a community and placed under a carefully selected rural passive air defense community chief (Landluftschutzleiter), whose missions were as follows:

(1) To organize an adequate number of persons insuring that, in the event of large-scale damage, the community would be able to take independent firefighting and salvage

and rescue action with its own resources.

(2) To organize a permanent all-night standby service.

The rural passive air defense communities were organized in line with the following principles:

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(a) The properties to be grouped together had to be so located in relation to one another that uniform control and mutual support could be guaranteed. This implied the possibility of wide observation and good means of communication. The subdivision of the area into fire sectors also had to be taken into consideration.

(b) The size had to be so arranged that adequately numerous personnel capable of the necessary action would be available to make possible the organization of firefighting and salvage and rescue teams, leaving self-protection personnel over for guard duties and for direction in the individual buildings, if this was at all possible. The greatest distance in any one direction was not to exceed 330 yards.

(c) Within the area of each rural passive air defense community at least one suitable person with appropriate qualities of leadership had to be available to serve as the authorized community leader.

(d) The properties to be grouped together in a community were not to be selected on the theoretical basis of

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maps and lists of residents, but on the basis of a fact-finding inspection of the area, including a check on the number and capabilities of actual inhabitants.

(e) Points of main effort were to be developed for the protection of particularly valuable targets or of targets particularly sensitive to fire hazards, such as storage sheds, hay lofts, and concentrations of livestock.

In cases where it was not possible to meet the requirements for the establishment of such group communities, the passive air defense communities established under the regulations governing the self-protection system had to remain in existence in rural areas.

Training for passive air defense self-protection had to extend to all inhabitants of a locality who were physically and mentally capable of such service. Each person had to be trained to render support in firefighting and salvage and rescue operations.

Agricultural and forestry establishments of any considerable size required special passive air defense measures, for which reason they were handled under the regulations governing the extended self-protection system, with due application of the requirements of Air Force Field Manual L. Dv. 755.

399. See "Erlass R. G. L. u. OE. G. L., II. 6. 1943, Betr. "Luftschutz auf dem Lande."

400. See p. 195, above.

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The ruling factor for the inclusion of a factory or other establishment in the extended self-protection system was its size. As a rule, any industrial or other establishment covering an area of more than 14 000 square yards (500 morgens) or employing more than 30 persons was registered under the extended self-protection system.

Experience showed that the bombing of villages and single buildings was frequently due to inadequate blackout measures. Strict adherence to the blackout regulations was therefore stated as the primary requirement of passive air defense. Owners were required to expend great care in installing the necessary blackout facilities in all buildings, especially in stables and other livestock sheds.

The greatest hazard to rural properties during air attacks was fire, due to the accumulations of flammable materials and to the types of buildings involved. A highly important requirement in rural passive air defense was therefore to reduce fire hazards by means of precautionary measures. Here, the primary requirement was to erect fire walls. This was an especially important requirement in cases where the living quarters, stables or other livestock stalls, and/or hay or other storage rooms, with large attics, were under a single roof. Here it was absolutely essential to divide the

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280 separate parts of the building by fire-proof walls, and to clear the attics of flammable material.

The first requirement for fire control action was to have the necessary equipment available, such as the standard passive air defense fire extinguisher, wall breaking hooks, ladders, axes, and choppers. Equally important was the requirement to have adequate stocks of fire extinguishing chemicals on hand.

Next in the order of importance was the availability of adequate water supplies for firefighting action, a difficult matter in rural areas at all times even to this very day. Strenuous efforts were made, in agreement with the highest national authorities, to improve this situation.

Finally, it was essential to increase the manpower strengths of rural firefighting forces, in areas particularly exposed to air attack. The necessary action was initiated here by a decree issued by the Commander in Chief of the SS and Chief of German Police (Reichsführer SS und Chef der deutschen Polizei) issued on 3 June 1945.

The passive air defense measures to be taken for the protection of animals were prescribed in the following bulletins:

Passive Air Defense Bulletin for Keepers of Animals  
(LS-Merkblatt für Tierhalter).

401 Ministerialblatt für die innere Verwaltung (MBl IV) 1942,  
p. 1213.

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First Aid for Animals after Air Attacks (Erste Hilfe des Tierhalters nach Luftangriffen).

Bulletin for Animal Keepers on the Effects of Phosphor-Type Incendiaries on Animals, and on Human and Animal Foodstuffs (Merkblatt fuer Tierhalter ueber Einwirkung phosphorhaltiger Brandstiftungsmittel auf Tiere, Lebens- und Futtermittel).

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Passages in the directives for rural air defense established the fact that a large percentage of all animal losses occurred while the animals were at pasture, and that they were due primarily to bomb fragments or to the animals having eaten feed contaminated by poisonous residue from bombs. In consequence, keepers of animals were advised to stable their stock at night and to prepare against the need for salvage or remedial action.

The alert was given by the local passive air defense chief. The standing rule was that small settlements and isolated farms would not be alerted unless their neighborhood created particular hazards of air attack. Nevertheless, the necessary precautions had to be taken for the call in of support from nearby in the event of a direct attack.

Reports were transmitted through the observation posts or by means of the public telephone network, which remained

402. These bulletins are no longer available.

281 in operation day and night under orders from the Reich Mini-  
ster for Aviation and Commander in Chief of the Air Force.

282 The success of passive air defense measures in rural  
areas depended on their proper application and on the selfless  
willingness of the rural population to do their duty. It is  
a well known fact that it is particularly difficult to arouse  
the interest of the rural population in passive air defense  
and even more so to get them to accept any innovations in  
this field.

For the above reason it is necessary to warn here against  
stereotype action in organizing a rural passive air defense  
system, since such action could have harmful psychological  
effects on the willingness of the population. The whole sys-  
tem should, rather, be adapted to local usages.

n All that is necessary is to exploit, for passive air  
defense purposes, the already existing spirit and custom  
of neighborly help. In no other profession and in no  
other strata of the population is the spirit of neighbor-  
ly help as pronounced <sup>during times of peace</sup> as in the rural population. The  
whole passive air defense system must be built up on  
this foundation. Those farms which in times of peace  
render each other mutual support, must be consolidated  
to form a passive air defense community. Under no cir-

circumstances should those responsible for the arrangement of a passive air defense community sever the already existing bonds of mutual neighborly support if the defense community is to operate successfully.

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k. The Protection of Cultural Monuments, Food Supplies, and Animal Feeds. Although the storage, transportation, and distribution of food supplies and animal feeds were a responsibility divided between the self-protection and extended self-protection systems, it nevertheless became necessary to establish special regulations on the subject.

The threat of shortages influenced the Reich Minister for Aviation and Commander in Chief of the Air Force, in the Temporary Instructions issued on 10 September 1938 and 24 February 1939, to state the following requirements:

(1) For Households. The timely procurement of tightly closing containers. In the event of an air alert, food-stuffs were to be closed in the containers which were, in addition, to be well wrapped in several layers of paper, newspaper if no other was available. Food supplies and animal feeds stored in the open were to be covered first with straw, leaves, or fir twigs, then with several layers of large-sheet paper, and finally, if possible, with earth. If sod was used for the top cover, it was to be

403. Footnote 90, above.



places root side up.

(2) Distribution Centers. Outside and shop window food displays were to be cleared, and only absolutely essential quantities of wares were to be retained open within shops. Airtight fixtures were to be mounted on all windows and doors of storage rooms; measures were to be taken to prevent draughts; exhaustor vents were to be rendered airtight. In the event of an air alert, shutters were to be closed, all wares were to be placed in storage rooms and containers, and any wares remaining in the shop were to be properly covered, as described in (1), above.

(3) Markets and Marketing Halls. Sales times and days were to be regulated, and open air markets were to be widely spaced. Portable containers and covering material were to be held ready to hand.

(4) Slaughter Houses and Cattle Yards. Slaughter houses were to remain in operation as long as at all possible, on as many weekdays as possible, working in several shifts. Emergency slaughter houses were to be prepared. Measures were to be taken to insure maintenance of proper meat inspection services, including inspection for trichinosis. Storage of large quantities of meat in cold storage houses was not to be allowed; such supplies were to be distributed for storage in the

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cold storage facilities of the trade as soon as possible.

Alternate cold storage houses were to be recorded, for example those of breweries or ice factories, and arrangements were to be made for their use in an emergency. All

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windows and doors of all cold storage houses were to be rendered airtight.

Filters of the types used in industry were to be held available against the eventuality of cooling plants being destroyed because of the indirect gas hazards which would result through the escape of ammoniac.

(5) Creameries. The question was to be investigated whether it was possible to make deliveries directly to the distributing points, bypassing the central collecting creameries. The measures prescribed under (3), above, for cold storage houses and other storage premises were to be taken.

(6) Other Large Establishments of the Food Supply, Animal Feed Supply, and Storage Industries. All processing and storage premises were to be rendered as fire-, shatter-, and gasproof as possible. Exhauster vents were to be rendered airtight, and covering material was to be held ready to hand. As far as at all possible, finished products were to be sold only ready packed.

(7) During Transportation. If at all possible, only

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closed vehicles were to be used. In other cases, steps were to be taken to insure tight covering on all sides with appropriate covering material.

Later, the above instructions were supplemented and set forth in special decrees, with due consideration to the ap-

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licable current experience.

Measures to protect articles of cultural value and importance were taken locally under the extended self-protection system. Other measures included the requirement to protect them against splinter damage or to evacuate them to less dangerous areas, and in particular the practice of storing them in natural or manmade underground shelters. Comprehensive organizational preparations were necessary for the latter measure above, since the very delicate nature of some of the items involved, such as paintings, or museum articles of the most varying types, necessitated lengthy scientific investigation of the intended storage sites. Furthermore, it was necessary to insure that they would be cared for constantly by expert personnel.

In the future this field will also call for a great expenditure of effort. Improvisations here could result in irreparable damage.

404. See IV, i, above.

405. See IV, d., above.

It is not possible within the scope of the present study to enter into the subject of the scale on which irreplaceable works of art and culture were destroyed in World War II.

1. Care of Persons Stricken by Bombing Attacks. At the beginning of the war, propaganda by Germany's opponents expressed the threat of bombing attacks against open cities.

Due to this propaganda, the responsible Government and National Socialist Party authorities took increasingly effective measures in preparation to counter the results which were to be expected in the wake of air warfare.

The highest authorities of the National Socialist Party had set themselves the goal of remedying any harm done to the civilian population in air attacks by means of counteraction to be taken by the Party organization.

In the first few weeks of the war a number of Gauleiters (National Socialist Party provincial or district leaders and chief administrators) were appointed as Reich Defense Commissioners. The area ~~of each~~ under the jurisdiction of a Reich Defense Commissioner corresponded to the confines of the Military Area (Wehrkreis) involved. In 1942 each of the 42 Gauleiters in existence was appointed Reich Defense Commissioner (Reichsverteidigungskommissar) for his district.

The appointment of the Reich Defense Commissioners did not

286 entail the establishment of new governmental offices. In each case the offices and staff of the district or county governmental administrative chief (Regierungspräsident) located at the seat of the Reich Defense Commissioner served as the administrative and executive organ of the commissioner, and the administrative chief himself as the commissioner's deputy.

The Reich Defense Commissioner was authorized to issue directives within the scope of existing laws to all civilian authorities in matters of defense. The primary consideration here was to care for the civilian population after air attacks. Responsibility for control of the civilian population within the zone of interior was assigned exclusively to the Reich Defense Commissioners.

Pursuant to instructions from the appropriate Reich Defense Commissioner, each city council established a Social Welfare Office for Air Warfare Victims (Sozialamt fuer Kriegs-gergeschadigte). As a rule this office comprised the following branches:

- (1) Emergency Quarters Branch.
- (2) Welfare Operations Branch.
- (3) Food Supply Branch.
- (4) Central Registry.
- (5) Air Warfare Victim's Household furnishings Salvage and Housing Branch.

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286 For the execution of his missions, each Gauleiter (or Reich Defense Commissioner) had available the National Socialist Party organizations within his zone of authority.

287 The only thing that could protect those whose health had suffered and those who had lost their homes against utter misery was coordinated action by all concerned. Thus, it was a mission of the Reich Defense Commissioners to give all possible support to the national, state, and communal authorities in their activities to protect the civilian population, and to place the organizations of the National Socialist Party completely at the services of the social welfare agencies taking care of the civilian population.

It was probably due to the above arrangements that no central, national, authority existed in Germany at the time to direct support measures after attacks against German towns and cities. It was only after Cologne and Essen had come under attack by forces of a thousand bombers on 30 and 31 May 1942, with disastrous consequences for the civilian population, that an "Inter-Departmental Committee for Air Warfare Victims (Interministerieller Luftkriegsschaeden-Ausschuss) was created at the national level under the chairmanship of Reich Minister of Propaganda Goebbels after the appropriate preparations had been made. Besides the Reich Ministry for Aviation and the Army High Command, 19 other Reich Ministries and other central

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287 national offices and/or authorities participated as members in this committee. A permanently operable staff of the committee was stationed in premises at Wannsee, Berlin, in the summer of 1943, where it received from the Air Force one stationary and five mobile radio stations. These were to enable the staff to maintain direct contact with major disaster areas in the event of any failure of the specially linked up telephone lines.

The committee also controlled ten particularly well equipped motorized relief platoons, also made available by the Air Force. Each of these platoons had a motor pool of between twenty and thirty heavy trucks with trailers, and ten mobile field kitchens capable of supplying a total of 7923.39 US Gallons (30 000 liter) warm food daily. In addition, each relief platoon, besides the necessary food and water supply trucks, had special vehicles with clothing to provide 2 000 persons with a complete outfit.

A base was established for each relief platoon in an area not too seriously threatened by air attack but nevertheless in the proximity of important targets of attack, and each such base contained quarters for the platoon personnel and large stocks of supplies.

The ten platoons had a total manpower strength of 5000,

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under command by noncommissioned officers and officials of the Air Force. The personnel themselves were Netherlanders (Dutch) who had volunteered for this service, and the fact merits mention here that they achieved astonishing performances in a spirit of excellent comradeship, and frequently moving for months without a break from one town to another. On arrival at a bombed locality, the warm food prepared while they were travelling could be served immediately, and within two to three hours after arrival the large tents they carried along were erected and the issue of underwear, outer garments, and household utensils could commence. This form of welfare work did much to ease the lot of the stricken population.

In addition to the above the committee had, with assistance from the Military High Command, converted large barges taken from inland waterways shipping to serve as "kitchen ships" which in many cases proved of excellent service.

Use was also made of military unit kitchens, the normal purpose of which was to supply meals to transient troops during regrouping movements by military forces.

The "Bavarian Relief Column (Hilfszug Bayern)", established already prior to the war, was too unmaneuverable for initial relief action after major attacks, and could only be taken into consideration as a second line relief support.



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For the transportation of injured persons, the committee resorted to the use of military hospital trains and the hospital trains of the Red Cross Association.

National Relief Trains (Reichsstättenhilfszüge) were organized by the Reich Ministry for Economics at the request of the committee. These trains were made up of 40-50 rail cars each, and carried all commodities which experience taught that the population of a bomb stricken area would need most urgently.

Craftsmen Trains (Handwerkerzüge), made up of caboose-type cars, and carrying each a company of tilers and glaziers, were extremely important. Besides the skilled workmen, the trains carried all the necessary materials for roof covering and similar work, so that work could commence the moment they arrived at the scene of action. The personnel were prisoners of war, who volunteered for this work time and again because of the superior rations they received and because of the friendly attitude of the population.

The above use of prisoners of war was supplemented by the use of German skilled workers in the Reich Special Service of Artisan Guilds (Reichssondereinsatz des deutschen Handwerks). The personnel employed in this service were skilled workers taken from districts not so seriously stricken by

289 bombing attacks.

Motorized Workshop columns were also organized, comprising fully equipped motorized workshops for carpenters, fitters, plumbers and electricians, and other artisans. These columns could be dispatched to heavily stricken towns, where they could commence operations immediately after arrival without need for local support of any kind. Manned by capable specialized personnel, these relief columns could proceed to the very center of a stricken area and give speedy support.

Finally, mention is due here to the entire establishment of the National Socialist Welfare Society (Nationalsozialistische Volkswohlfahrt). It is impossible to do full justice to the welfare work done by the responsible leaders of this organization and their assistants in support of the victims of air warfare.

Without the spirit of willing sacrifice and selfless devotion displayed by the countless voluntary helpers, both men and women, most of the measures planned by the committee could not have been effectuated.

There was little tangible evidence of the work done by the committee, but that work was of incisive importance in bringing initial support to the victims of bombing attacks, and thereby of eminent importance in maintaining the will of the

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nation to continue resistance, since the population at large realized with full confidence that everything humanly possible was being done to ameliorate the results of the air attacks.

In future planning for passive air defense it would be wise to take into consideration from the very outset the establishment of a committee of this type in the form of a mobile staff with extensive powers of authority.

At the intermediate level, each Gauleiter in his position as Reich Defense Commissioner had the responsibility of insuring that the activities of the various authorities in the field of air warfare and its consequences were properly coordinated. Furthermore, each Gauleiter within his area of responsibility channeled the requests of the various authorities to the central control authorities. Due to the lack of flexibility in normal official channels, such requests otherwise would have been subject to intolerable delays or would even have failed to reach the proper quarters, with dire consequences for the population.

The activities of each Reich Defense Commissioner comprised primarily the following fields:

(1) The provision of quarters for persons who had become homeless because of damage done in bombing attacks and who were to be evacuated for passive air defense considerations. Such matters were handled together with the National Socialist Welfare Organization.

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(2) The feeding and general care of the population.

(3) Measures to insure proper medical care, a matter handled with support from the military.

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(4) Measures to repair installations of the utility services, and to restore transportation and communication media to operability. This was done in cooperation with the appropriate authorities.

(5) The direction of the commitment of artisans and of reconstruction work.

#### ACTIVITIES OF A REICH DEFENSE COMMISSIONER DURING AN ATTACK

When penetrations by enemy air forces were reported and/or during air attacks, the Reich Defense Commissioner, together with his various district/office chiefs remained at his operational command post. Also present at the command post were the branch chiefs of the executive organ of the Reich Defense Commissioner, namely of the Office of the district or county governmental administrative chief (Regierungspräsident); the branch chiefs of the Social Welfare Office for Victims of Air Warfare; leading personnel of the SA organization; district leaders of the Hitler Youth Movement; the National Socialist Womens League, of the National Socialist Peoples Welfare Organization, League of German Girls, etc.

The advance plans made and precautionary measures taken comprised:

- (1) The stockpiling of food supplies.
- (2) Arrangements for emergency quarters in schools, boarding houses, hotels, etc.
- (3) The outfitting of emergency or alternate hospitals.
- (4) The establishment of clothing depots.
- (5) The establishment of central shelters.

Without any waste of time through involved reporting channels, all National Socialist Party offices, governmental authorities, and local passive air defense chiefs reported any damage done in air attacks directly to the operational command post of the Reich Commissioner for Defense locally responsible. From this point everything was arranged immediately that could and/or had to be arranged centrally. The officials of the National Socialist Party collected persons bombed out of their homes and concentrated them at collecting or evacuation points. The female welfare workers of the National Socialist Peoples Welfare Organization were called in for service at the various collecting points, and if necessary emergency quarters were opened for air raid victims if other suitable quarters in private homes could not be found for them immediately through the responsible local Party chapter (Ortsgruppe). In the emergency quarters such people could at least be offered

292 temporary warm and dry shelter.

Before the night of the attack was over, the responsible Party district chiefs (Gaunamtsleiter) proceeded to the damage areas, the collecting points, and the emergency quarters. There they examined on the spot and in consultation with the chief of the local Party chapter (Ortsgruppenleiter) the problem of what support measures were essential. All measures deemed necessary were initiated immediately by the Reich Defense Commissioner.

While the above was taking place the Reich Defense Commissioner assigned units of the SA, the National Socialist Motorist Corps, the Hitler Youth Movement, and other organizations, to assist in the rescue of persons buried under ruins, to support fire-fighting operations, to evacuate injured persons, to transport and shelter such persons, children, and persons rendered homeless, to salvage household utensils and furnishings, and to move in food supplies from the appropriate depots.

Even while bombs were still falling, the National Socialist Peoples Welfare Organization (Nationalsozialistische Volkswohlfahrt) commenced issuing warm beverages and food, clothing, and other necessary items, and assigning homeless people to new quarters. The kitchen establishments of public offices, of hotel and similar businesses, and of factories, plus the field kitchens of the National Socialist Party and of the

292 military were placed in operation immediately and commenced serving hot meals. All of these installations were recorded systematically beforehand.

If it was possible to form a realistic estimate of the number of persons bombed out of their homes, the National Socialist Peoples Welfare Organization on the same night as the attack arranged its plans for the reallocation of such persons to new quarters, and made the necessary <sup>transport</sup> arrangements with the national railway service and with the other transportation firms. Certificates for the new quarters were issued by the National Socialist Peoples Welfare Organization, and on the following morning personnel of the welfare organization accompanied the transports and conducted the evacuees to their proper places. In the receiving localities the local chapters of the welfare organization assumed responsibility for the collective care of the evacuees and for the provision of food.

In order to give some idea of the variety and scope of the tasks arising for the Reich Defense Commissioner the following details are presented from a major attack by 800 enemy planes against a city with a population of approximately 700000 in western Germany on the night of 30-31 May 1942.

The attack left more than 100 000 persons homeless. 45 000 homes, numerous administrative and National Socialist Party offices destroyed, and the traffic and communication networks

293 as well as food depots demolished. Gas, water, and electricity supplies failed.

Field kitchens of the National Socialist Welfare Organization, of the military, and of the Relief Support Columns had to furnish meals for several hundred thousand people. Nearby towns or supply depots under other Reich Defense Commissioners furnished 100 000 loaves of bread, 6 600 000 pounds (3 000 000 kilograms) Rice, and 5 500 000 pounds (2 500 000 Kilograms) noodles.

Alone on the day following the attack the Economics Office, assisted by officials of the National Socialist Party issued 1 200 000 purchase certificates, 30 000 of the for footwear.

Reported losses had to be verified by the appropriate local chapters of the National Socialist Party before certificates were issued, since the Economics Office naturally had not sufficient time to check the justification of requests while, on the other hand, it was impossible to let the people requesting the certificates wait.

The next big complication was that of procurement, since 150 retail shops had been put out of operation. The Reich Defense Commissioner immediately arranged for the establishment of emergency outlets, which on the day following the attack issued

60 000 bed sheets



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100 000 meters curtains

34 000 suits of mens' clothing

50 000 sets of clothing for boys and girls.

On the day after the attack the entire population was given a special allocation of soap powder and soap, entailing the issue of

90 000 packets of soap powder

700 000 bars of soap

in addition to a special issue of

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10 000 000 cigarettes

600 000 cigars

2000 pounds of coffee, confectionery, etc.

All of these tasks were handled by the various organizations of the National Socialist Party.

Also during the night of the attack, the Reich Defense Commissioner by telephone or teletype requested from the Reich Ministry for Economics special allocations of beverages, food, luxury food items, underwear and outer garments for the population, plus the support installations held available by the Care for Air Warfare Victims Committee (Luftkriegsschadensausschuss).

This one attack alone resulted in 370 000 claims for compensation, all of which were decided in 15-18 hours of hard work.

All of the figures just given above are from official sources.

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That the above missions were executed successfully was possible only by means of close cooperation between the governmental, military, and National Socialist Party authorities.

#### DUTIES OF A REICH DEFENSE COMMISSIONER AFTER AN ATTACK

While the stricken population on the morning following an attack was being provided with coffee, meals, and clothing, the Reich Defense Commissioner and his officials had other urgent missions to perform. Large gasoline supplies had to be procured and moved in for rubble clearing operations and for the movement of construction material to wherever it was needed.

Parties of skilled workmen had to be moved in from other areas to repair minor and more serious damage, to restore the gas, water, and electricity services to operability, and all necessary materials, such as glass, roofing felt, tiles, nails, and timber, had to be procured and delivered.

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National Socialist Party members had to be called in and organized in loading teams for the postal and railway services, and the initial needs for support in the form of funds and clothing had to be met.

The National Socialist Peoples Welfare Organization meanwhile continued its operations of moving bombed out persons to new homes. The local groups of the organization assumed re-

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295 responsibility for the care of the persons thus reallocated, while the appropriate local chapters of the National Socialist Party (Ortsgruppen der NSDAP) informed the next of kin of the new residence of their relatives.

In almost five years of air warfare the town dealt with here experienced 3 500 acute air raid warnings and 350 actual air attacks.

In view of the progressively shorter intervals between the increasingly frequent attacks, the various Reich Defense Commissioners, with support from the National Socialist People's Welfare Organization, initiated operations to evacuate children to rural areas.

In addition, adults whose presence in air threatened areas was not essential were evacuated, if they so desired, to less threatened areas. In such receiving areas, the National Socialist District (Gau) Headquarters of the dispatching district established special offices to which evacuees could at any time apply for assistance in regulating their affairs in their home districts, and to which they could express desires concerning their new quarters.

On the day after each attack the Reich Defense Commissioner concerned dispatched reports on the attack to the National Socialist Party Chancellory, to the Propaganda Ministry, and to

295 the Ministry of the Interior. Supplementary reports were dispatched continuously on later and final figures for casualties--both dead and injured--, and on the damage incurred.

Care of the victims of bombing attacks also placed a heavy burden of responsibilities on the local passive air defense chief concerned, who delegated these responsibilities to the passive air defense police and the local offices of the Reich Passive Air Defense Society. Thus, the available emergency quarters had to be marked for identification, and the population had to be oriented accordingly within the scope of instructions on self protection. This was of particular importance in the case of alternate quarters.

From 1941 on it was anticipated that during or after a heavy air attack there would be a mass exodus of the population from endangered cities, but due to the remarkably good morale of the population this expectation did not materialize. However, preparations against such an eventuality included the stationing of blocking and reception posts at all important road intersections and other important points. These posts had the mission of closing off certain areas, in particular bridges, of explaining to the fleeing population the futility of unorganized flight, and, if their efforts failed, to divert the stream of evacuees into specified directions. <sup>407</sup>

The establishment and maintenance of temporary emergency <sup>407.</sup> See footnote 90, above.

296      quarters was a mission of the Reich Defense Commissioners.

In order to insure uniformity in reporting on the damage caused by air attacks, the Reich Minister for Aviation and Commander in Chief of the Air Force, through his Passive Air Defense Operations Staff, issued a special decree to Gauleiters and Reich Defense Commissioners on 8 February 1943. The decree established standard patterns for reports on the current air situation, on air attacks and damages incurred, and on the subjects of targets of attack and the tactics employed by the attacking forces.

What the responsible agencies and their innumerable honorary assistants handling welfare for the population accomplished accomplished in tireless and selfsacrificing work, under conditions which became increasingly difficult from month to month, is unprecedented in the annals of history. The few cases of failure due to human frailties are completely inconspicuous beside the overwhelmingly outstanding performances of the whole. The organization as such was excellent and continued so up to the last moment.

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m. Evacuation of the Population. During the build up of

the civilian passive air defense organization, a question

408. See "Amliche Verlautbarungen zum Luftschutz," Volume 5, p. 8; Verlag Gassschutz und Luftschutz, Berlin-Charlottenburg, 1944.

409. Ibid, p. 212.

297 which came up for lively discussion was that of whether it would be possible to evacuate the entire civilian population or at least large sections of the population from particularly air threatened cities or industrial regions. Opinions differed widely on this subject. On the one hand consideration had to be given to the fact that working personnel would have to remain behind because of the necessity to maintain production; on the other hand the feeding and general care of substantial segments of the population within the already narrow confines of Germany would present problems exceedingly difficult to solve.

It appeared a logical necessity to move the population out of closely built up areas, with special fire hazards, of cities before devastatingly heavy attacks could occur, but such measures were impossible for psychological reasons. It would have been impossible to convince the population, which had been lulled into a feeling of security by press and radio, of the necessity for any such steps, so that strong public resistance had to be expected from the very start. Furthermore, measures which cut so deeply into the personal life of the individual can only be taken on a voluntary basis. For these reasons the problem was postponed for future decision.

Instead, measures of partial evacuation were initiated,

297 in which women, children, and elderly persons no longer employed at work were evacuated from areas exposed to air threat on a voluntary basis. Special receiving areas were designated for this purpose, most of them in the eastern territories of Germany during the first years of the war. Initially, these evacuation movements were handled by the internal administration. Later, the National Socialist Party assumed this responsibility, since it was found impracticable to assign such responsibilities to a governmental agency.

Under this system numerous individuals and complete families were evacuated from the Rhine-Westphalia industrial region, in the course of which it became necessary for authorities of the internal administration to participate, because of the necessity to regulate a large volume of economic problems. The local passive air defense chiefs also participated in the selection of the areas to be semi-evacuated and of the categories of persons to be moved out. The communities involved were required to take the necessary measures involved in the procurement of permanent and temporary quarters for the evacuees, in the matter of payment for such quarters, and in the matter of living requirements and other welfare matters.

The Passive Air Defense Act and the Law Governing the Requisitioning of Property and Services for Defense Purposes, together with the decrees and statutes implementing these laws,

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298 provided the necessary legal basis for all such measures.

Measures of the above type were not designated as "evacuation" movements, but rather as "rehousing" programs. 410

The "rehousing" of children assumed large proportions. Under this program whole school classes were moved to rural areas situated <sup>in</sup> German regions farther in the east as well as within the Protectorate of Bohemia and Moravia. Parents were allowed to decide whether their children were to be moved together with their school classes or not. However, if a child did not accompany its class, other arrangements had to be made for its school attendance. All movements of this type were carried out without expense to the persons involved.

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The result of this program of moving whole school classes was that the majority of all children of school age were moved out of acutely threatened areas, since most parents were unwilling to accept the risk that the education of their children might be hampered. Parents were also perfectly at liberty to arrange for their children to stay with relatives or friends in rural areas and attend the local schools there. Parents were also allowed to accompany their children to their new homes, unless the father was subject to conscription for military service or one of the parents was required under the emergency service

411. Karlsruhe Document Collection: "Erfahrungen bei den Luftangriffen im zweiten Weltkrieg im--Continued



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laws to render services in some official capacity or in a specific factory or other installation.

Very few adults, particularly in the working classes, availed themselves of the opportunities offered under the voluntary evacuation programs. The women preferred to stay with their menfolk, who were employed in factories or other installations. By comparison with the working classes, relatively large numbers from the so-called "upper classes" left the threatened areas voluntarily, some of them for short and others for longer periods. No town council is able to determine the number of persons who left a town voluntarily during the war, because members of the "upper classes" when leaving a threatened area did not report their departure, preferring instead to continue receiving their ration cards from their home towns and/or districts. The reason for this was the desire to avoid having other bombed out persons assigned by the municipal billeting office to occupy their vacant quarters. It was thus by no means <sup>due</sup> exclusively to chance that so many detached villas were burned down, the reason being that they were unoccupied when stricken by bombs, so that there was nobody on the spot to extinguish fires before they could spread.

411--Continued--Rheinisch-Westfälischen Industriegebiet,  
by Major Schmidle, 1955, pp. 101 ff.

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The circumstance that the highest office of the National Socialist Party specified the "receiving areas" insured an even distribution, both of school children and of members of the general public, evacuated from threatened areas, throughout the entire territory suitable for the purpose. Quite apart from this, individuals were at liberty to temporarily change their place of abode to an area less threatened than their home areas.

Although the measures described above did to a certain degree thin out the population in particularly densely populated regions, dense concentrations nevertheless remained, a circumstance which resulted in serious loss of life in major air attacks.

The problem of evacuation is closely bound up with that of transportation. Although evacuation movements in the early stages were spread over relatively long periods of time, the national railway system was soon taxed to maximum capability in efforts to cope with the increased load of traffic. Whereas evacuees in the initial stages were allowed to take along fairly large quantities of furniture and household utensils, it became necessary later to impose restrictions, particularly in view of the fact that these precautionary evacuations very soon had to be carried out on an ever increasing scale concurrently with the evacuation of bombed out persons.

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The handling of voluntary evacuees who were not essentially required at their places of work in their home towns was regulated by the general directives issued on this subject, but certain categories were evacuated in accordance with carefully prepared and carefully executed programs. Such categories were as follows:

(1) Mothers with Small Children, and Pregnant Women.

These were taken care of, primarily by the National Socialist Peoples Welfare Organization and the German Red Cross Association, under the "Mother and Child (Mutter und Kind) Program."

(2) School Children between Six and Ten Years of Age.

These also were taken care of by the National Socialist Peoples Welfare Organization and the German Red Cross Association under the Child Evacuation to Rural Areas (Kinderlandverschickung) Program."

(3) School Children in the Age Classes Eight to Fourteen.

These age groups came under the "Child Evacuation to Rural Areas and the Extended Child Evacuation to Rural Areas (Erweiterte Kinderlandverschickung) Programs," conducted by the school authorities, the National Socialist Teachers Union (Nationalsozialistischer Lehrerbund), the Hitler

412. See IV, 1, below.

422

301 Youth Movement, and the German Red Cross Association.

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According to post-war investigations, for example, 80 000 children were evacuated in this way from Hamburg in 1940, and 300 000 altogether from the centers of large cities in 1943. In this way it was accomplished that a by no means inconsiderable percentage of the young generation escaped the consequences of bombing attacks and the harmful influences which the frequent night alerts would have had on their health.

For the future precautionary measures of this nature, on the largest scope possible, will be of inestimable importance for the growing generation.

In view of the density of the population in Germany, and in view of the dependence of Germany on industrial production, it appears that the problem of the evacuation of complete cities cannot be solved. Any sudden evacuation is inconceivable because it would produce a traffic chaos, with terrible consequences if the movement were to come under air attack. Events would have to be expected similar, for example, to those which occurred as a result of the air attacks against Dresden.

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In contrast, the idea of establishing internationally recognized "protected zones" for the civilian population, as

413. US Strategic Bombing Survey--Civilian Defense Division Final Report, pp. 175, ff., where further details will also be found on the subject. (Copy in Karlsruhe Document Collection).

414. See IV, n, below.

301 planned in the Geneva Agreement of 1949, appears quite feasible as a measure to ameliorate to some extent the inhumanity of modern air warfare.

In general, action to evade a developing danger will correspond to the degree in which the endangered party needs protection. How difficult the organized regulation of such evasive action in order to prevent its deterioration into disorganized flight is, however, is illustrated by the experience gained in the various heavy air attacks against towns. The problems involved have been dealt with frequently in publications specializing in such subjects, as was the case with a recent publication using Hamburg as an example. 415

The problem of evacuation requires very careful study for the future.

415. "Ausweichen--Der natuerliche Schutz (Die Flucht der Hamburger Bevoelkerung anlaesslich der Grossluftangriffe auf Hamburg im Sommer 1943)." In "Ziviler Luftschutz," Verlag Gasschutz und Luftschutz, Koblenz, Vol. 2/1956.