

### 3. ARMED FORCES, MILITARY TECHNOLOGY

# THE ROLE, PLACE AND FUTURE OF THE ANTI-AIRCRAFT DEFENCE ELEMENTS IN TERRITORIAL DEFENCE STRUCTURES

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#### ABSTRACT

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The purpose of the article is to analyse the elements of the anti-aircraft defence within Territorial Defence Forces. For this purpose, the author outlined the general concept and role played by Territorial Defence in the defence system of the nation, analysed the impact of the anti-aircraft defence on the military tasks performance as well as examined the localization of the anti-aircraft defence sub-units in the Territorial Defence structures and air defence system of the nation. Research findings presented by the author indicate the need to take into consideration numerous aspects, resulting from the specialist character of the air defence forces, in the process of creating Territorial Defence. The author also pays special attention to the possible participation of the air defence within Territorial Defence Forces in the multi-layered anti-aircraft defence system of the nation.

#### KEY WORDS

Anti-aircraft Defence, Territorial Defence Forces, Air Defence, Territorial Defence, Multilayered anti-aircraft defence.

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*„A well organized territorial defence system based on local forces is indispensable in national defence strategy”*

*Prof Z. Brzeziński*

## Introduction

A changeable geopolitical situation in Central Europe and in the world, in particular conflict in eastern Ukraine are the basis for reconsidering subjects concerning safety and defence capabilities of Poland. On 21 December 2016 President of Poland Andrzej Duda signed an act passed on 16 November 2016, which amended the Act on general compulsory military service of the Republic of Poland, under which a new

type of Armed Forces, that is Territorial Defence (TD), was formed. Territorial Defence Forces (TDFs), in addition to Land Forces, Air Forces, Navy and Special Forces are supposed to be the fifth type of power<sup>1</sup>, complementing the national defence potential.

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<sup>1</sup> Act of 16 November, 2016 r. amending the Act on the general obligation of the Republic of Poland defence and other acts. Art 3, act 3.

Figure 1. The Armed Forces of Poland.



Source: Author's own study

The figure presents the assumptions incorporated in the Act of 16 November 2016 and introduces Territorial Defence Forces as a separate and independent type of power, creating together with Operational Forces the entire structure of the Armed Forces.

According to experts, in the present economic and political situation, a concept of creating Territorial Defence Forces was rated as the cheapest, fastest and most effective<sup>2</sup> in comparison with the necessity of national reconstruction of the military safety and increased national defence potential. As the Minister of Polish National Defence emphasizes, „*Modern army requires such a component and NATO armies have such a structure, too, but also because of the fact that country requires that special situation – Poland, being at risk of the activities of our north-east neighbour – Russia – who does not hide its aggressive intentions and at least since 2008 has been taking actions aimed at destabilizing and threatening not only Poland but also our closest neighbours*”<sup>3</sup>.

<sup>2</sup> See, Press conference of National Defence Minister Antoni Macierewicz on the formation of the Territorial Defence Forces, 14 November, 2016. <http://www.mon.gov.pl/aktualnosci/arttykul/najnowsze/szeftmon-o-obronie-terytorialnej-g2016-11-14/> (access March 15, 2017).

<sup>3</sup> <http://www.defence24.pl/356175,macierewicz-pod->

In accordance with current doctrines of the use of aerial assault means as well as experience gained during armed conflicts in the 20<sup>th</sup> and 21<sup>st</sup> century, it must be stated that one of the first stages of the conflict is an air aggressive operation, during which the enemy strives to gain dominance in the air, which will allow further aerial assault echelons to destroy the objects of critical infrastructure, both military and civilian, as well as the devastation of subordinated groupings of troops and command posts. A main role in that stage of conflict is played by a fighter aircraft and air defence<sup>4</sup>. Therefore, the Territorial Defence Forces are an indispensable element of the standalone Armed Forces component, determining the performance of the assumed tasks and effective anti-aircraft defence<sup>5</sup>, which is a part of the Territorial Defence.

pisal-koncepcje-obrony-terytorialnej-to-istotny-element-nowej-doktryny-wojennej (access March 15, 2017).

<sup>4</sup> See, *Przyszłość Sił Powietrznych i jednostek obrony powietrznej w Siłach Zbrojnych RP, Pułaski dla obronności Polski*, Warsaw 2015.

<sup>5</sup> S. Zajas, *Siły Powietrzne. Dzień dzisiejszy i wyzwania przyszłości*, NDU, Warsaw 2009.

<sup>6</sup> Lt. Jacek Pajak, *Srodki lekkiej obrony przeciwlotniczej w osłonie pododdziałów wojsk lądowych*, science notebooks Land Forces Military Academy, No. 3 (153) 2009.

The establishment of the Territorial Defence Forces creates the need to analyze the proper inclusion of anti-aircraft subunits into the Territorial Defence. The purpose of research presented in the article is to determine the location of anti-aircraft subunits in the structure of the Territorial Defence, its role and impact on the achievement of the goals set for the TDFs.

## 1. The concept of the territorial defence army

*Well organized militia (at present – Territorial defence, author's footnote.) is essential for the safety of the free state (...).*

Constitution of  
the United States of America

The starting point for reflections on the territorial defence of the nation and role of the anti-aircraft defence within its structure is an analysis of current guidelines, regulations and projects dealing with missions and tasks of the Territorial Defence.

The Territorial Defence Forces are the fifth type of Armed Forces in the Polish national defence system. TDFs are an independent type of the Polish Armed Forces, which in a significant way are intended to increase Poland's defence potential. TD service will be carried out by professionals and soldiers performing a new type of active military service, that is Territorial Military Service. According to the amendment of the Act on Military Service, the commander of the Territorial Defence Forces is the commander of the Armed Forces and is subordinated to the Minister of National Defence. In the target model of Armed Forces, the Territorial Defence Forces will be located similarly to other types of Armed Forces Commands<sup>7</sup>.

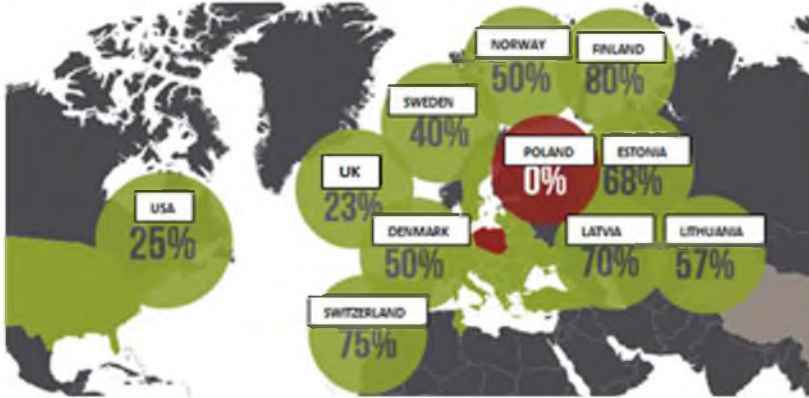
In a functional sense, the Territorial Defence is a military form of universal national protection and defence, conducted at the territorial level throughout Poland, providing the protection and defence of city borders, important facilities and areas, especially critical infrastructure. In the case of aggressor's intrusion, the Territorial Defence in cooperation with the Operational Forces is responsible for performing irregular activities on a mass scale to a complete destruction or dislodgement of the aggressor's power, together with providing support for both operational development, operation of own forces and the possible strengthening of the NATO, as well as immediate and widespread military support for the authorities and society in a situation of natural disasters, technical catastrophes, misfortunes and needs<sup>8</sup>.

The above assumptions about a national approach to the issue of the Territorial Defence are reflected in the defensive inference of NATO states. The importance of the Territorial Defence in national defence systems of countries from all over the globe are presented below.

<sup>7</sup> <http://www.mon.gov.pl/obrona-terytorialna/pytania-i-odpowiedzi/wot-w-systemie-obronnym-panstwa/2016-12-28/> (access March 19, 2017).

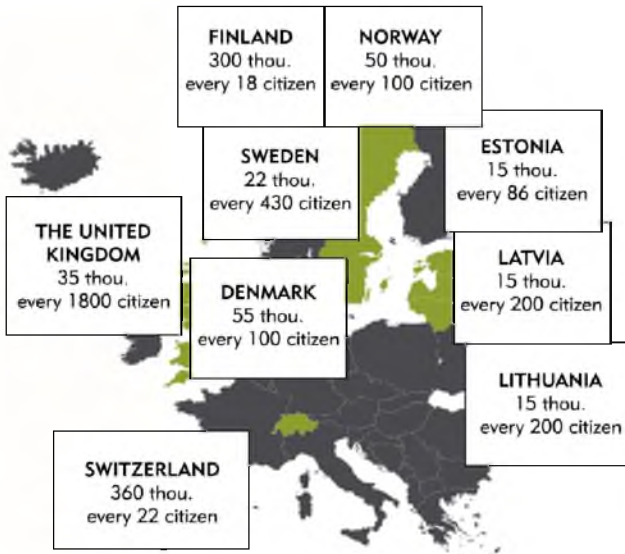
<sup>8</sup> Dr hab Józef Marczak, *Koncepcja strategiczna obrony terytorialnej Polski w XXI w.*, Warsaw 2008r.; See more. Interview with Professor Józef Marczak on the INFO channel, <https://www.tvp.info/27599346/chiny-i-usa-stawiaja-na-obrona-terytorialna-jest-niezbedna-dla-bezpieczenstwa-narodowego> (access March 19, 2017).

Figure 2. Examples of countries with the developed Territorial Defence structure worldwide



Source: ObronaNarodowa.PL, National Defence system, <https://obronanarodowa.pl/download/KSON.PDF>

Figure 3. Examples of countries with the developed Territorial Defence structure in Europe



Source: ObronaNarodowa.PL, National Defence system. <https://obronanarodowa.pl/download/KSON.PDF>

An analysis of the percentage of the TD (figure 2) in the Armed Forces of the countries presented indicates that the TDFs constitute a significant and indispensable component of the entire Armed Forces of each country. Particular attention should be paid to the size of the TD, especially in Baltic

States (figure 3), where the TD is a decisive part of the entire Armed Forces capability.

However, the creation of a new type of the Polish Armed Forces is not sufficient to exploit its potential rationally. Thus, it was necessary to conduct an analysis of the tasks entrusted to the TDFs.

The Ministry of National Defence intends to entrust the TD with the following tasks:<sup>9</sup>

- carrying out military operations in cooperation with operational forces (in the case of a conflict). These actions will be aimed at destroying or holding back the forces of a potential opponent;
- civilian protection from the effects of natural disasters, elimination of their effects, search and rescue operations, protection of human life and health and participation in crisis management tasks.
- the protection of local communities against the effects of destabilization and misinformation;
- cooperation with elements of the state defence system, especially with provincial governors and local self-government authorities;
- the protection of local communities against the effects of cyber attacks;
- spreading the idea of patriotic education in society;
- conducting independent unconventional, counter-attack activities;
- participation in providing security of the allied forces in commanded areas.

In addition, the literature analysis of the subject indicated that the TDFs are obliged to fulfil the following commitments:<sup>10</sup>

- the preparation and implementation of local protection and defence, in particular critical infrastructure;
- carrying out territorial reconnaissance;
- taking care of the national heritage;
- in the situations of armed conflict and own territory occupation, conducting irregular activities on a mass scale.

Based on the above mentioned tasks, it can be stated that the TDFs as a component of the Armed Forces covering the entire country, having a strict attachment to the areas of responsibility, are entrusted with a wide range of responsibilities. Conclusions drawn from the experiences of recent armed conflicts prove that in order to fulfil tasks assigned to TDFs, it is essential to organize defence against aerial assault means.

In the Polish concept of the TD it is assumed that the TDFs will act as a light infantry<sup>11</sup>, equipped with modern gear and armament<sup>12</sup>. The structure and equipment of each TD company will strictly depend on the area of responsibility: a type of terrain, an amount of critical infrastructure, and population. It is assumed to create and equip TD companies including four profiles:<sup>13</sup>

- urban;
- mountainous,;
- aqueous;
- general.

A basic section of the light infantry company is a „great twelve” – a light infantry section. Additionally, it is assumed that each TD brigade will be supported by engineer equipment, combat support units, anti-tank weapon, anti-aircraft weapon and unmanned aerial vehicles, in order to provide support for subordinated forces in the area of responsibility.

<sup>9</sup> See: <http://www.mon.gov.pl/obrona-terytorialna/onas/zadania-wot-n2016-12-27/> (access March 19, 2017).

<sup>10</sup> Lt. J. Marczak, *Założenia strategiczne budowy (odbudowy) terytorialnego komponentu Sił Zbrojnych RP*. National defence service.pl, on: [www.obrona-narodowa.pl/content/strategiczna-koncepcja-ak.html](http://www.obrona-narodowa.pl/content/strategiczna-koncepcja-ak.html), (access March 19, 2017).

<sup>11</sup> <http://www.mon.gov.pl/aktualnosci/arttykul/najnowsze/szef-mon-o-obronie-terytorialnej-g2016-11-14/>, (access March 19, 2017).

<sup>12</sup> See: <http://www.defence24.pl/501614,wojska-obrony-terytorialnej-narzedzie-skutecznego-odstraszenia-raport>, (access March 19, 2017).

<sup>13</sup> See: <http://www.mon.gov.pl/aktualnosci/arttykul/najnowsze/poslowie-wysluchali-meldunku-terytorial-sow-y2017-01-26/> (access March 19, 2017).

## 2. The influence of anti-aircraft defence on the performance of tasks

A role played by the anti-aircraft defence in the entire system of the country is determined by the location, situation and allied commitment of Poland. As a NATO flanking state neighbouring with Russia, Poland is strongly exposed to a rapid attack of aerial assault assets of the opponent. The purpose of the aerial assault means would be to inflict the greatest damage to *the most critical infrastructure* of the country and its paralysis.

Anti-aircraft defence is part of air defence, aimed to prevent attacks from the opponent's aerial assaults means in the interest of own fighting forces<sup>14</sup>. The main purpose of the anti-aircraft defence is to provide convenient conditions for friendly forces in the case of an air threat situation, protection of objects and critical infrastructure as well as air warning against aerial assault means. Only effective, well organized anti-aircraft defence together with air forces, especially fighter aircraft, guarantees gaining and maintaining dominance in the air, thus fulfilling the given tasks (e.g. the protection of designated infrastructure) and creating favourable conditions for the performance of other task forces. Lack of air superiority means the unlimited domination of opponent's air and it can completely prevent from accomplishing the tasks of own forces. According to NATO criteria, three degrees of air domination are distinguished:<sup>15</sup>

1. A favourable air situation – in which the air effort undertaken by the air forces of one side of the conflict is insufficient to prevent the success of land, navy

and air operation of the other side.

2. Air superiority – the degree of domination in the air battle of one force over another, allowing one side to conduct operations by land, navy and air on the indicated area and time without significant counteracting from the other side of conflict.
3. Air supremacy – the degree of domination in the air, in which opponent's air forces are unable to counteract effectively.

Analysis of the literature of research subject indicates that it is possible to gain and maintain air superiority by using effective anti-aircraft defence means, ensuring operation in the entire airspace.

The anti-aircraft defence plays a decisive role in combating opponent's aerial assault means. The Polish Armed Forces possess two types of anti-aircraft defence means in the structure of air forces:

- PZR Nawa SC (a modernized set of S-125M Nawa – M);
- PZR Wega C (a modernized set of S-200WE Wega – WE).

Two anti-aircraft missile sets in the structure of land forces:

- PZR 2K12 KUB (SA-6);
- PRWB Osa-AK (SA-8).

In addition, the Polish Army is equipped with the ZUR-23KG and ZSU-23-4MP artillery-rocket sets, ZU-23-2 artillery set and portable PPZR Grom (SA-7) anti-aircraft rocket sets.

An overview of the anti-aircraft defence of the Polish Armed Forces, its combat capabilities, the possibility of acquisition and use, regarding the need to equip TDFs with anti-aircraft means indicates that there should be mainly portable anti-aircraft missile sets (Grom, Piorun) and artillery-rocket sets with 23mm calibre.

Realizing the significance of the anti-aircraft forces and taking into consideration

<sup>14</sup> B. Zdrodowski, *Podstawy obrony powietrznej*, NDU, Warsaw 1998.

<sup>15</sup> See. J. Kaczmarek, W. Lepkowski, B. Zdrowski, *Słownik terminów w zakresie bezpieczeństwa narodowego*, NDU, Warsaw 2008.

combat capabilities of own anti-aircraft rocket sets and its limits (one-channel sets), the Polish Armed Forces are implementing two greatest projects in the history of the anti-aircraft defence, that is *WISLA* and *NAREW*.

A modern concept of the anti-aircraft defence operation assumes its „multidimensionality” (Figure 4)<sup>16</sup>. The comprehensive anti-aircraft defence is to be made by mutual complementary „levels” of the anti-aircraft defence forces and various possibilities resulting from their combat capabilities. The more layers of the anti-aircraft defence shield, the more efficient defence and possibility of destroying aerial assault assets are. Depending on the needs, an anti-aircraft defence system can be made up of certain „levels”, creating together a meshing system with the full and complex

anti-aircraft defence, and thus guaranteeing dominance in the air. Regarding the assumption of the Polish Armed Forces, the Polish national anti-aircraft defence is to be made up of three layers (without PZR Wega C):

- I. A medium range anti-aircraft defence system – designed to destroy targets at a range up to 100 km – *WISLA programme*;
- II. A short range anti-aircraft defence system – designed to destroy targets at a range up to 20-40 km – *NAREW programme*;
- III. A very short range anti-aircraft defence system – designed to destroy targets at a range up to maximum few kilometres – *POPRAD, PILICA, PIORUN programmes*.

Figure 4. Multilayered anti-aircraft defence scheme



Source: R. Ciaston, J. Gruszczynski, R. Lipka, A. Radomyski, T. Smur, *Przyszłość Sił Powietrznych i jednostek obrony powietrznej w Siłach Zbrojnych RP, Pulaski for the defence of Poland, Warsaw 2015.*

A defined role and objectives of the anti-aircraft defence allows the Polish Armed Forces to articulate the requirements that modern, and above all, efficient anti-aircraft defence should fulfil. Analysing the literature on the anti-aircraft defence, it can be claimed that the anti-aircraft de-

fence can be effective only by using the so-called layered air defence. All elements of this system are important and must form an interlock defence zone.

<sup>16</sup> *The Polish Institute of International Affairs, Bulletin No. 42 (1279), April 28, 2015.*

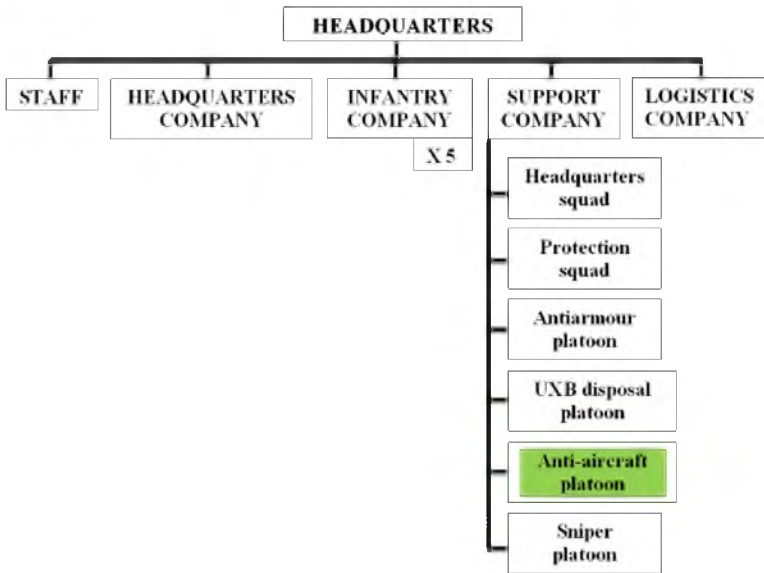
### 3. The anti-aircraft defence in the territorial defence structure

The concept of the TDFs assumes that the main TD training structure will be a battalion<sup>17</sup> consisting mainly of (Figure 5):

- A light armoured company (quantity depending mainly on the TD brigade);
- Headquarters company;

- Support company – consisting mainly of specialist platoons, including anti-aircraft platoon;
- A service support company;
- headquarters.

Figure 5. Structure of a Territorial Defence battalion



Source: Own study.

The structure of a TD battalion assumes locating anti-aircraft platoon in the support company. The size and exact structure of the anti-aircraft defence platoons is not determined yet; according to assumptions it should be related to the area of battalion's responsibility.

According to the information provided by Ministry of National Defence, the armament and equipment of the TDFs will not differ from that of the operational armies. The

engagement of aerial assault means by TD will be by:<sup>18</sup>

- ZUR-23-2 anti-aircraft artillery-rocket sets;
- GROM/GROM-M portable anti-aircraft rocket sets;
- PIORUN portable anti-aircraft rocket sets<sup>19</sup>.

<sup>17</sup> See. <http://www.mon.gov.pl/aktualnosci/arttykul/najnowsze/poslowie-wysluchali-meldunku-terytorial-sow-y2017-01-26/> (access March 19, 2017)

<sup>18</sup> See: <http://www.mon.gov.pl/aktualnosci/arttykul/najnowsze/umowa-na-zakup-zestawow-piorun-p2016-12-20/>, (access March 18, 2017)

<sup>19</sup> <http://www.defence24.com/253841,mspo-2015-przeciwlotniczy-piorun-z-meska>, (access March 19, 2017).



Particular attention should be paid to the PIORUN portable anti-aircraft rocket set due to its tactical-technical and combat capabilities as well as national character. It is a modernized version of PPZR GROM. Thanks to modernization, it has increased its range, greater immunity to interference, higher precision of guidance and ability to destroy targets during day or night. PPZR PIORUN is designed to destroy helicopters, planes and winged rockets at ceilings from 10 m to about 4 kilometres and distance from 500m to more than 6000 m<sup>20</sup>.

An overview of the available TD structure allows for specifying the location of the anti-aircraft defence in its groupings and starting thinking about its necessity, composition, armament, and tactics.

Analysing the multi-layered concept of the anti-aircraft defence, research should be conducted into the role and location of the anti-aircraft defence in the TD structure. Taking into account the anti-aircraft defence armament of the TD and the general and nationwide character of the TD it can be said that the well equipped subunits of the TD along with the brigade subunits of the anti-aircraft defence can create the lowest anti-aircraft defence.

## Conclusions

*The way of conducting operations by the Territorial Defence Forces does not include the classic elements of the Land Force, i.e. attack and defence. It is a constant presence. Their main task is to protect civilians and critical infrastructure in the designated area. This specificity justifies the existence of the*

*Territorial Defence as a separate type of the Armed Forces*<sup>21</sup>.

**General Wiesław Kukula,**

*Territorial Defence Forces commander*

Well- equipped, prepared and deployed anti-aircraft subunits in the Territorial Defence will fulfil their tasks and create favourable conditions for other tasks entrusted to the Territorial Defence Forces, and together with air defence subunits of the other kind of Armed Forces, equipped with short range air defence sets, may form one of the layers of the comprehensive anti-aircraft defence system of the nation.

Analysing the development of armed conflicts, that is enemy's activity and tasks that have to be fulfilled by the TDFs, i.e. cooperation with the operational forces and protection of the critical infrastructure in the area of responsibility, it must be said that anti-aircraft defence subunits are indispensable and essential elements of the anti-aircraft defence structures.

Regarding the assumptions for anti-aircraft subunits within TDFs it is worth taking into account their specialist character and carefully analyse:

- the character and training place – necessary specialist training base and qualified staff;
- the structure of subunits of the anti-aircraft defence in the TDFs – size appropriate to designated tasks;
- action of tactics – taking into account the area of action and the area of responsibility;
- armament – enabling tasks performance;
- a place and role of the TDFs anti-aircraft defence in the national air defence system i.e. in a layered anti-aircraft defence system;

<sup>20</sup> <http://www.defence24.com/253841,mspo-2015-przeciwlotniczy-piorun-z-meska>, (access March 19, 2017)

<sup>21</sup> See: <http://www.defence24.pl/501614,wojska-obrony-terytorialnej-narzedzie-skutecznego-odstraszenia-raport>, (access March 19, 2017)

- the amount of critical infrastructure in the area of operation;
- a role in general air defence and civilian protection.

All of the above-mentioned factors are the basis for further research into anti-aircraft defence subunits in the TD structures. In its final conclusions, the research conducted presents the best possible and full information about the organization and functioning of the air defence in the TDFs in order to fully guarantee that tasks are performed.

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