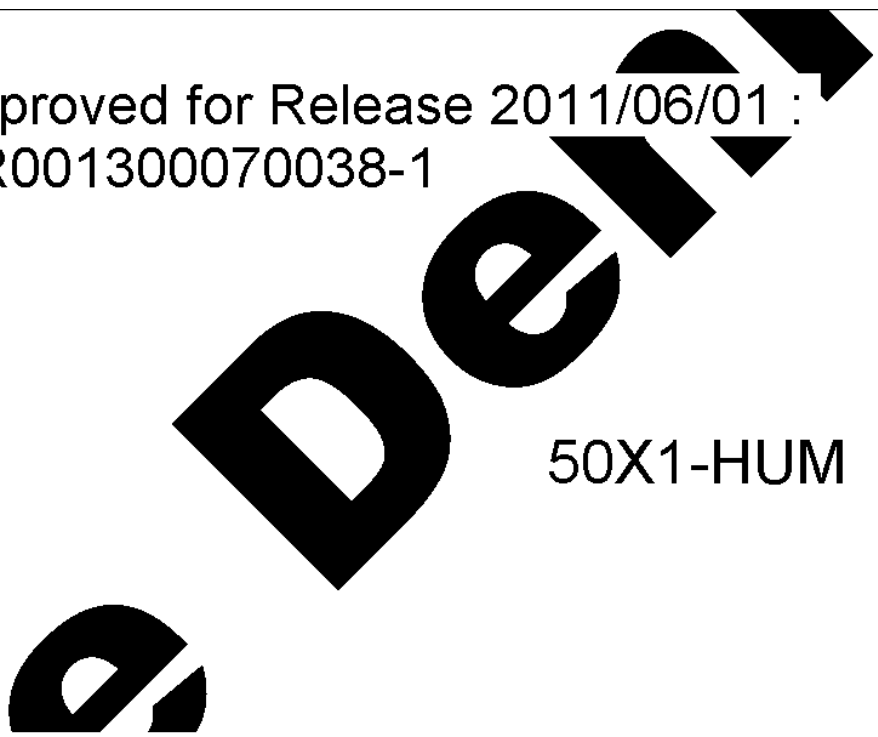




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INFORMATION REPORT INFORMATION REPORT

## CENTRAL INTELLIGENCE AGENCY



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COUNTRY Poland

REPORT

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SOURCE EVALUATIONS ARE DEFINITIVE. APPRAISAL OF CONTENT IS TENTATIVE.

1. The following basins in Poland possess lead-zinc ores: the Bytom (Beuthen) basin, the Chrzanow-Olkusz basin and the Tarnow basin. There are 50X1-HUM four active mines in the Bytom basin: Orzel Bialy, Warynski, Marchlewski, and Nowy Dwor. The Boleslaw Mine and the Chrzanow Mine are in the Chrzanow - Olkusz basin. The only work being done in the Tarnow basin is exploratory work with the aid of geological drillings. The Bytom basin is the richest in zinc.

Orzel Bialy

2. The Orzel Bialy works is made up of the mine, a sediment processor, a flotation processor, and a zinc foundry. Daily extraction from the mine amounts to 1,200 tons of zinc ore with a content of 9 percent zinc, zinc sulphide, blende (ZnS), and 800 tons of calamine ores - zinc oxide. The blende ore is refined and enriched on the sediment processor up to 16 percent zinc and the galena (PbS) is separated while the rest is ground in coal mills. All the ore passes on the flotation machinery where zinc ore and blende with a content of 53 percent zinc is obtained. Calamine ore extracted at the mine is sifted and crushed at the mechanical processor and is passed to the rotary kilns of the foundry at the Orzel Bialy mine.

3. The Orzel Bialy works has ten rotary kilns. Daily production amounts to about 120 tons of roasted oxide in addition to 16 tons of raw lead and about eight tons of cadmium.

4. The zinc blende and part of the galena are sent out to the zinc mills at Szopienice (N 50-16, E 19-07), Gliwice (Gleiwitz) (N 50-17, E 18-40), Lipiny, and Kunegundow (N 51-13, E 21-27). The remaining galena is processed in furnaces for the purpose of obtaining raw lead. The roasted oxide is transported by narrow-gauge railroad to the mills mentioned above. The cadmium oxide is entirely transported to the Szopienice works, where there is a cadmium refinery. Raw lead from Orzel Bialy is also brought to the Szopienice and the Warynski works, where the raw lead is processed into refined lead and lead for technical uses.

S-E-C-R-E-T

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| STATE | X | ARMY | X | NAVY | X | AIR | X | FBI | AEC | | | | | |
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(Note: Washington distribution indicated by "X"; Field distribution by "#".)

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Marchlewski

5. The Marchlewski works is made up of a mine, a sediment processor, and a flotation processor. Daily production of blende ore is approximately 1,400 tons with a content of 9 percent and 400 to 500 tons of calamine ore. In addition, it produces daily around 180 to 190 tons of flotation blende with a zinc content of 6[illegible] percent and a water content of about 5 percent. The calamine ore is stored in stockpiles because of a lack of consignees and because of the small zinc content which is about 6 percent ZnS. Some 1,200 tons of Marchlewski ore are treated on the sediment and flotation processors at the mine and the remainder of the ore is passed on through the subterrancan to the Orzel Bialy mine pit.

6. Both Orzel Bialy and Marchlewski possess drying sheds. Each has a different type of dryer. The Orzel Bialy works has a disc or plate drying shed whereas the Marchlewski works has a rotary kiln where the flotation blende dries. Other mines at this time do not have dryers, with the result that the water content approaches 13 percent.

7. The Marchlewski works produces flotation galena and sediment galena. About 13 tons of galena are received daily on the sediment machine and about 14 tons with a content approaching 65 percent on the flotation machine.

8. In addition, Orzel Bialy and Marchlewski produce a so-called "markazyt" which is sent out to a chemical foundry for processing into sulphuric acid. Markazyt at Marchlewski has a sulphur content of 45-46 percent, Orzel Bialy a content of 38 [illegible]

Marynski

9. The Marynski works is made up of a mine, a mechanical processor, a sediment processor, five rotary kilns, and two Doerschl furnaces. It extracts daily around 1,100 tons of zinc ore with a zinc content of 7 percent and 150 tons of calamine ore with a zinc content of 6 to 7 percent.

10. The ore is enriched to about 14 percent by the mechanical processor through the use of the sediment equipment and is all shipped to Orzel Bialy and processed there for flotation blende. The galena obtained, presently about 12 to 13 tons daily, is sent to the Orzel Bialy and the Szopienice foundries.

11. As stated above the Marynski works has five rotary kilns and in these furnaces old prewar calamine fine, containing around 10 percent zinc, is processed. Calamine from the mine is also processed from which approximately 55 tons of roasted oxide is obtained daily. The plan calls for 60½ tons.

12. The Marynski foundry processes all of its raw lead into refined lead and, in addition Orzel Bialy supplies Marynski with 200 tons of raw lead monthly. Daily production of refined lead amounts to about 18 to 20 tons. The refined lead is of an excellent quality. Content of this lead amounts to 99, that is 99.99 percent, and is chiefly earmarked for military needs and for the production of cadmium.

13. Most of the lead earmarked for military use is sent to Wroclaw (Breslau) to a factory unknown to source.

14. The Marynski foundry also produces babbitt. [illegible] refined lead with an admixture of carbide which serves for smelting very durable roller bearings. The entire production of babbitt goes to Wroclaw and to the railroad industry. To the best of source's knowledge, in all of Poland, only the Marynski works produces babbitt. Monthly production is about 60 to 70 tons, and sometimes the plan is exceeded.

15. The Marynski zinc oxide foundry produces cadmium oxide which is sent to the Szopienice foundry for refining. There it is smelted into cadmium metal.

Nowy Dwor

16. Nowy Dwor has a large flotation processor but has no gravitating or sediment processor. The gravitating processor was dismantled in 1953-1954 because the zinc content in this mine was only about 4 percent; the sediment processor was dismantled at the same time.

17. All the ore at Nowy Dwor is ground at the roller bearing mill and sent to the flotation machines. Daily production of the flotation blende amounts to about 126 tons and 13 tons of flotation galena in addition to 10 tons of markazyt. Nowy Dwor receives zinc ore from the Boleslaw works since Boleslaw has no equipment with which to process zinc ore.

Boleslaw

18. The Boleslaw Mine in the Chrzanow - Olkusz basin has a foundry which was built in the last six years and finished either in 1954 or 1955. Production at the mine is lower than at those in Upper Silesia because of the lower content of zinc in the waste which is processed. The foundry has ten rotary kilns for which, source believes, there was a plan for 60 tons of roasted oxide. Raw lead and cadmium oxide are produced.

19. The Boleslaw Mine produces around 7,000 tons of raw blende monthly and sends it to the Orzel Bialy works for processing on sediment and flotation machinery. Galena extracted at Boleslaw is transported to the Boleslaw foundry and part is washed, resulting in galena with a content of 70 percent.

20. It is foreseen that new flotation machinery will be installed at Boleslaw within the next five years so the extracted ore can be processed there.

Chrzanow

21. The Chrzanow mining works is located in Chrzanow (N 50-08, E 19-24), partly in Jaworzno (N 50-13, E 19-17) and partly in Trzebinia (N 50-10, E 19-29). They are very extensive but have little potential. Extraction figures were not known to source who said, however, that extraction in these three mines was very small compared to Silesian mines. Only calamine ore is extracted. The ore is washed, the galena separated, and the calamine stockpiled.

22. In Trzebinia there is a pit being drilled where blende ore has been discovered. It was known that sulphur was there though, at present, none is being mined because of difficult drilling conditions. A pit 200 meters in depth must be drilled and penetration conditions are difficult. There are various opinions about the sulphur reserves there since the probability exists that the sulphur is not in strata but in nests (sic).

Limits of Specific Mining Areas in the Bytom Basin

23. The Orzel Bialy area stretches from the east beyond the village of Dabrowka Wielka, four miles west of Bytom, where there are already spurs, to the south to Uskok[2] where, in general, the sulphur ends, to the north where it runs along the Chorzow, Dabrowka Wielka, Orzeziny and Piekary Slaskie railroad track. The western part borders on the Marchlewski works. This border runs more or less across the old 1939 Polish-German border.

24. The Warynski works stretches from the northern part of Bytom to the border of Orzel Bialy.

25. From the east Marchlewski is bordered by Nowy Dwor, on the north by Warynski and it stretches westward to Bytom. It is bordered on the south by Uskok where, in general, the sulphur mines end, that is, to the Bytom-Chorzow railroad track. As with Orzel Bialy, its eastern section touches the Warynski works; the northern section runs to the spurs, and it extends as far as Zabrze (Hindenburg) in the west.

26. All four mines have direct underground connections. From Nowy Dwor one can go to Warynski, from Warynski to Marchlewski, and from Marchlewski to Orzel Bialy.

Geological Character of the Strata

27. The known ore reserves are not diminishing at a constant rate. They diminish because of exploitation but increase as new discoveries of ore are made through exploratory gangways, drillings, and shafts. The exploited ore corresponds more or less to what is planned. For example, Orzel Bialy in 1949 had around eight million tons of ore in reserves and at present still has about seven million tons because of new discoveries. The same proportion of reserves exists for other mines. The life span of a mine can be calculated for more than thirty years of exploitation if one bears in mind the decreasing content of blende in the ore and the fact that the exploited ore will become steadily poorer.

28. There is less re-exploitation work done at the Nowy Dwor Mine, where the work is done in block layers in the non-exploited part. At Marchlewski about 10 percent of the beds is re-exploitable, at Orzel Bialy about 15 percent, and at Warynski more than 80 percent. Productivity on re-exploitation is markedly less. Boldly speaking, one may say that productivity of re-exploitation varies from 55 to 65 percent of the productivity of block portions.

29. In the Bytom basin the crumbled ore lies in diluvium. This is true in the entire basin. The Orzel Bialy, Marchlewski, Warynski, and Nowy Dwor mines are exploited to a depth of 100 meters.

30. The Chrzanow Mine is exploited to a depth of 80 meters but exploitation to a depth of more than 200 meters is envisaged in the Trzebinia area because the sulphur ore lies that deep.

31. Perpendicular shafts are used at all mines for extraction as well as the coming and going of the miners. Specially constructed cars are used to transport the miners at the Orzel Bialy Mine. However, in the other mines the miners approach their place of work below the shafts. No work is done more than four or five kilometers from the shaft.

32. Boring hammers (sic) are used to drill holes in which explosives are placed for blasting. Shovels and picks but no modern tools are used in these mines, chiefly because they are not suitable.

Stockpiles and Reserves

33. With respect to the Bytom basin, reserves checked there amount to about ten million tons with an average content of 7 to 8 percent zinc. Of that, 40 percent is galena and 60 percent is ZnS sulphur.

34. In recent years, however, new stores of sulphur have been discovered in the Tarnogorskie basin beyond the city of Tarnowskie Gory (N 50-27, E 18-52) in the vicinity of Miasteczko where there is a heavy afflux of water. Within the next five years mines will be opened in this area to balance the losses which occur by the decreased amount and content of extracted zinc-lead ore. The content of zinc-lead ore becomes progressively lower from year to year and is even reflected in the yearly, quarterly, and monthly plans in which the fall of the zinc content is taken into account. For example, in relation to 1955, in 1956 at the Marchlewski Mine the zinc content fell from 10.4 to 9.8 percent, and it may fall to 9 percent in 1957. This indicates that there is an annual drop of 0.8 percent. This is true because the richer parts of the mine are being terminated and ore of a smaller content is being extracted. The content will not drop to zero because a 4 to 5 percent content is retained for a long time.

35. The extraction of ore with a content of 5 percent is profitable, but the flotation has to be enlarged in order to allow all the ore to pass through the flotation machinery and enrich it.

36. In the past, for example in 1938, ore was exploited at Orzel Bialy with a content of 18 percent. At present ore with a content of 9 percent is being exploited which means that it has dropped to one-half. At Marchlewski in 1949 ore was exploited

with a content of 14 percent but at present has a content of only 9 percent. Therefore, if it continues to fall, it will have a content of 5 to 6 percent. This is known and foreseen at Orzel Bialy and Marchlewski.

37. In order to balance the deficiencies arising from the lower zinc content it is foreseen that new mines will be opened and new foundries built. In the Tarnowskie Gory area, in addition to the zinc-lead mines to be opened, a zinc oxide foundry is to be built during the present five-year plan. Mines are not yet being opened but geological drillings are being conducted which reveal that there is a high content of sulphur and calamine ores.

38. In the Chrzanow basin there is a layer beneath the 80-meter stratum. The Boleslaw Mine is at present driving a shaft which will extend to the lower strata. The Jaworzno Mine is also driving a shaft to the richer part of the mine. At the Chrzanow Mine colossal difficulties are experienced with sand through which the shafts cannot be driven.

Production Costs

39. Production costs of the mines are based on assumed and unrealistic figures. Advance planning for all mines anticipates their operation at a loss. For example, Marchlewski has a deficit which is foreseen at about two and one-half million zlotys. Warynski has a deficit of over three million, and Orzel Bialy has a deficit of over three million. Nowy Dwor also has a planned deficit. Actual losses are even greater than anticipated. The Marchlewski Mine in 1955 had an anticipated deficit of three million zlotys; its actual deficit was six million zlotys. Warynski was in a better position because it exploited raw ore.

40. The production costs are based on experience of former years. They are not based on the sale of materials because the material is sold far below production cost. There is a big difference between the production of one ton of raw ore at Orzel Bialy, Marchlewski, Warynski, and Nowy Dwor. Orzel Bialy operates with the lowest cost, then Marchlewski, Warynski, and Nowy Dwor, in that order. Mines in the Chrzanow - Olkusz basin are the most expensive to operate because production there is so slight.

End-Use of Materials

41. The buyers of flotation blende ore are the Szopienice works, the Lipiny works, and the Kunegundow works. These foundries are provided with raw materials by these mines solely. At present neither ore nor flotation blende is imported. Flotation blende has not been imported since 1952 but was imported before 1952, probably from Italy.

42. The markazyt is shipped to chemical factories where it is processed into sulphuric acid. The chemical factories to which it is shipped are various kinds of chemical factories, for example, those in Gdynia and Gdansk (Danzig).

43. Galena produced at Orzel Bialy is partly processed at the Orzel Bialy foundry as an admixture for lead oxide for lead production. The remainder is sent to the Szopienice works. The Marchlewski works sends out part of its galena concentrates to the Orzel Bialy and part to the Warynski works. The Boleslaw works and the Chrzanow works send their entire production to Orzel Bialy.

44. Nowy Dwor produces flotation blende, flotation galena, and markazyt. The flotation blende is shipped out to Szopienice, Kunegundow, and Lipiny; the galena as well as the markazyt is sent to chemical factories for processing into sulphuric acid.

Production Plan

45. The 1956 production plan has already been slightly lowered at most of the foundries. This reduction has been made because of the decrease in the stores and the lower zinc content in the ore since the concentrate is measured by the quantity of zinc content in the ore. Orzel Bialy fulfilled the plan with respect to quantity but not with respect to quality. A content of 11 percent zinc was expected but only 10½ percent was attained. Marchlewski fulfilled all its requirements except for zinc content. Ten percent zinc content was foreseen and 9.6 percent was attained,

but because of the lower zinc content the plan was exceeded in quantity by about 4 percent.

46. At Nowy Dwor a plan was fixed for the entire production but production did not develop as anticipated and the plan was lowered. The initial plan was said to be 146 tons of blende daily but the plan is now for 126 tons. The Warynski works did not fulfill its plan either as to quantity or quality. The mines fulfilled their yearly plan somewhere within the limits of 97 percent, the mechanical processing around 82 percent, and the foundry within 80 percent.

47. Orzel Bialy had a decreased plan this year, both as to quantity and quality.

48. With respect to production figures for 1956, Orzel Bialy extracts 50 tons of ore more or less daily. Marchlewski remains on this same level and has even increased production some 25 tons daily. However, because of this a content of 9.8 percent was used in the plan. This increased plan was achieved in January but was only 92 percent in quality. The Boleslaw Mine will extract about 150,000 tons yearly. It extracts about 400 tons of blende ore daily; the remainder is calamine ore. The Chrzanow Mine extracts only calamine ore, from 100 to 200 tons daily. Two tons of galena were included in the plan.

49. From transportation documents, source estimates that about 30 percent of the lead is used for national purposes and the rest is channeled to the Central Exchange in Warsaw and Wroclaw from where it is sent to warehouses. Lead and zinc ore are channeled to a sales office which receives and sells. These sales offices handle not only lead but all kinds of material.

50. There is no clear evidence that any of the lead is exported although source believes that it is exported to the USSR. He came to this conclusion because there is an acute shortage of lead utensils in Poland and lead is highly rationed. Production is such that for domestic needs there should be an excess of lead, and yet there is a great shortage.

51. All the cadmium is taken by the Polish Army. It is used chiefly for cabling and is called "secret" material.

Warehouse Facilities

52. At Orzel Bialy blende ore is processed for current needs because there are no storage facilities there. There are two reservoirs, one for calamine ore and the other for blende ore. These tanks have a capacity of about 15,000 tons which will not even store daily production. Ore has to be removed on a current basis. A two-day reserve of blende ore is permissible but does not actually accumulate since the reserve, though listed, does not exist. Warynski and Nowy Dwor may also have a two-day reserve, but this never happens.

53. The Marchlewski works processes its entire production and the rest is sent to Orzel Bialy (sic). It stockpiles the calamine ore by the mine. About 180 tons of calamine ore is stockpiled there. It is not being processed because it has a low zinc content and a high iron content which is harmful to the rotary kilns. However, the reserves in the stockpiles will be used if the richer slime comes to an end. The Warynski foundry uses the calamine ore mined at Warynski, and the blende ore is handled on a mechanical processor. Semiproducts are dispatched to the Orzel Bialy works.

Number of Employees

54. There are approximately 2,400 workers employed at the Orzel Bialy Mine. Of this number 12 percent are white-collar employees. At the Marchlewski Mine there are 2,250 workers, of whom 12 to 13 percent are white-collar employees. Nowy Dwor has approximately 1,500 workers, 13 percent of whom are white-collar employees. The Boleslaw Mine employs over 1,000 workers and the Chrzanow Mine around 600.

**Mine Directors**

55. Director-in-chief of Orzel Bialy is Fritsch (fnu) He has worked at Orzel Bialy for about six months. The technical director is Engineer Potempa (fnu), a young mining engineer. Engineer Kodron (fnu), another mining engineer, is also employed there. Director-in-chief at Marchlewski is Gerhard Czapla who is being groomed by the Party. Kwapulinski (fnu), a miner, was the technical director for five years but at present Ziomek (fnu), a mine technician, is technical director. He, too, is a Party man but attaches no great significance to it. 50X1-HUM

**The Foundry and Refinery Problem**

56. Poland has two zinc-lead foundries and three flotation machines to process zinc-lead ore. The foundries are at the following places: one by the Orzel Bialy Mine, which consists of 10 units of rotary kilns and is 40 meters long and 3.20 meters across. It is used for processing, for oxidation of ores and calamine slime for raw oxides. There are also three roasting ovens used for roasting raw oxides and the elimination of lead oxide. There are two Doerschl furnaces which are used for the production of raw lead and the elimination of cadmium oxide.and, in addition, Orzel Bialy has equipment for refining metallic lead.

57. Warynski has five rotary kilns with the same measurements as the kilns at Orzel Bialy. It has one large roasting oven and an auxiliary oven which is used when the large oven is being cleaned or slag is removed.

58. The Boleslaw refinery has ten rotary kilns, three roasting ovens and two Doerschl furnaces. The kilns are suitable for extracted calamine and for stockpiled slime which is, at present, processed in zinc oxide foundries.

**Rajmowka**

59. Rajmowka is the waste from zinc foundry furnaces. It is a kind of slag which is ground up and used as a charge for the foundry. In addition, about 25 percent coke is added plus some coal dust. The coke is mixed with the material and the coal dust is gushed forth to the front of the furnace, that is, blown by a puffer into the furnace. Exhaustion equipment like ventilators leading to the front of the furnace sucks up oxidizing gases into the gas chambers where they settle. They also settle in either kotrele (sic) or filter chambers. The **kotrele**, as the filter chambers, serve to pick up parts of the volatile zinc dust. This contains about 40 to 45 percent zinc and about 10 percent lead oxide. The dust from the chambers is automatically passed on to the roasting ovens where, with the aid of additional coke, the oxide is roasted and the lead oxide is conducted away by means of a ventilator.

60. The zinc oxide is sent to the Szopienice, Lipiny, and Kunegundow foundries as a finished concentrate semiproduct. The lead oxide is placed in Doerschl furnaces with an admixture of galena, iron, and soda. For the reaction of these four elements the cadmium oxide is conducted with the help of ventilators whereas the raw lead is let out into special vats from where it is poured into block form of approximately 50 kilos.

61. The amount of raw material put in the furnaces fluctuates from 110 to 120 tons per furnace per day. Production at Orzel Bialy amounts to 120 tons daily of roasted oxide, 16 tons of raw lead, and 8 tons of cadmium oxide. Production at the Warynski foundry amounts to 60 tons of roasted oxide daily, 16 tons of raw lead, 7 to 8 tons of lead oxide and 2 to 3 tons of cadmium oxide. The Orzel Bialy dispatches up to four tons of cadmium oxide per day to the Szopienice foundry where it is manufactured into metallic cadmium.

Flotation

62. The largest flotation is at Orzel Bialy. Daily production here amounts to 250 tons plus or minus with a ZnS content of 50 percent and around 5 percent water. Ore with a content of 14 to 16 percent is ground at mills to around one millimeter. This material is passed on flotation machinery. To the water there is added as a flotation reagent xanthates of sodium or potassium and lime and oils mainly from domestic production at present. This mixture takes up the zinc blende on the froth and with the help of rakes it is scooped to the corresponding gutters. There the froth is diffused and the zinc as a concentrate is seized on special vacuum filters which are already producing flotation blende with a content of 55 percent zinc and around 13 to 14 percent water. After drying the blende has a content of 5 percent water. This blende is sent to Szopienice, Kunegundow, and Silesia where the zinc is smelted. The flotation loaded at Orzel Bialy is made up of ore from the Orzel Bialy Mine and ore from Marchlewski and from semiproducts or enriched ore from Warynski.

63. The Marchlewski Mine has a flotation which processes around 1,100 tons of ore. Daily production amounts to roughly 180 tons of zinc ore with a content of 57 to 60 percent and 13 to 14 percent water. This ore dries in the rotary ovens and a blende concentrate with a content of 58 percent zinc and 5 percent water is obtained. This ore is sent to the following three foundries: Silesia, Szopienice, and Kunegundow. Markazyt is also obtained by flotation and is sent to chemical foundries where sulphuric acid is obtained.

64. Nowy Dwor has two small flotations. Daily production amounts to 126 tons of flotation blende. The blende is not dried because there are no drying facilities at Nowy Dwor. It is sent to the same three foundries.

65. Material is sent from all three mines to all three foundries because the water content in the concentrations varies. Therefore, the blende is distributed more or less proportionally to all the foundries.

Equipment

66. The furnaces at Orzel Bialy are operated about 78 percent of the time. They have to be out of operation some of the time for removing the slag and for laying out fire bricks. The furnaces at Warynski are operated in the same way.

67. Furnaces at Orzel Bialy are still built as primitively as in 1928. This is also true of the Doerschl-type lead furnaces, the special rotary kilns, and the horizontal for smelting raw lead.

68. After World War II three new furnaces were built at the Warynski works and a complete new foundry has been built at Boleslaw within the last six years. However, fundamental equipment is not being modernized at the old foundries. The flotation machinery is of an old type and is repaired and added to as in 1944 and 1946.

69. The building of a new foundry is foreseen for the Bibiela (N 50-30, E 19-01) area where there are old calamine stockpiles. The foundry is to have 8 to 10 rotary kilns, two Doerschl furnaces, and three roasting ovens, in addition to the equipment required for a foundry. This foundry is to be constructed to balance the discrepency with occurs because of lower content ore. One foundry is to be built in the present five-year plan and eventually two will be constructed.

70. A mine is foreseen for the second five years(sic). At the end of the present five-year plan the opening of a mine in the area of Bibiel-Gory, Miasteczko, 20 to 30 kilometers beyond Tarnowskie Gory on the Lublin side, is planned.

Benefits from Slag

71. Waste from rotary kilns is stored in stockpiles by the foundries and is not used at all. It contains 2 to 3 percent zinc and a high percent of iron and sulphur. Slag from the Doerschl furnaces is also stockpiled and 10 percent is used for loading the larger furnaces because it contains up to 16 or 18 percent zinc. Flotation waste is diluted with water and transported to sediment ponds; it is not used. Mines like Orzel Bialy or Marchlewski have several million tons of this sediment slime which have never been used.

72. The slime has a content of up to 5 percent zinc and 1 percent lead and quite a large percent of markazyt. This markazyt, as that at Marchlewski, reaches up to 12 to 13 percent.

73. At present it is not planned to use either the slime from the large furnaces or the flotation slime because it requires elaborate methods of technology and the construction of a foundry for processing it. However, tests are being conducted for processing markazyt waste from the chemical foundries. Such waste contains around 8 to 10 percent zinc and a large percent of sulphur and of iron. The waste is loaded into the large rotary kiln where the sulphur is oxidized and eliminates the lead. At the kotrelach the lead and zinc concentrates are seized and as waste it will be iron concentrate and thus it will be able to serve as charge for larger furnaces.

74. At this moment there are two furnaces at the Warynski works designated for these tests. If the tests give positive results, then either the Warynski foundry will be converted to the production of pyrite wastes or a special new foundry will be built. In this way considerable tonnage of concentrates will be obtained and some iron semiproducts. It is noteworthy that one furnace in 24 hours can produce up to 150 tons of iron with a content of 45 percent iron.

75. In connection with the decreasing content of zinc there are plans at most of the mines to eliminate the sediment process because of the unnecessary loss involved. Thus the raw ore will pass directly to flotation. This plan requires large investments, however, since the flotation process must be almost doubled. This system has already been adopted at Nowy Dwor where there is no sediment processor.

76. Flotation production, like flotation blende, is earmarked exclusively for further production in Poland: the smelting of metallic lead, galena for smelting raw lead, and markazyt for the production of sulphuric acid. In general, nothing from the flotation production is exported. Nor is roasted oxide exported because it is processed into metallic zinc in Poland.

Number of Employees at Foundries and Flotations

77. There are around 500 workers at the Warynski foundry, around 500 at Orzel Bialy, and around 500 at Boleslaw. Work is continuous throughout the year. Sometimes there are interruptions for overhauling or repairs. Normally, the foundries work on three shifts through the year. Usually they work on Sundays.

78. The flotation workers work on three shifts daily except Sundays, although at times work must be carried out on Sundays in order to balance the monthly production plans. There are only a small number of flotation workers. At the Marchlewski flotation there are approximately 30 persons employed and about the same number at the other flotations.

Escaping Dust

79. The saturation of the air with escaping gases fluctuates from 1.4 to 3 percent. These are sulphuric oxide gas, zinc oxide gas, and other oxide gases which are connected with the roasting process. Oxides are in general not seized but are permitted to escape into the atmosphere and have an injurious influence on the environment, killing trees and plants. At the present time there is no equipment nor is there any plan which would make it possible to capture this escaping dust.

1. [redacted] Comment: Presumably Lipiny west of Chorzow.

2. [redacted] Comment: Not further identified.

3. [redacted] Comment: There are three grades of lead in Poland: zero quality and qualities 1 and 2. Zero quality, which contains the least traces of bismuth, is the best, and production amounts to approximately 200 tons a month. The army also uses qualities 1 and 2 but only for second-rate purposes such as the production of cable.

4. [redacted] Comment: The Marchlewski works presently has a Scientific Institute for Nonferrous Ores. This is a section of the parent institute of the same name in Gliwice which is located in a huge building on the main street of Gliwice. The Gliwice institute employs hundreds of engineers and chemists. As a result of experiments conducted at this institute, a small factory has been put in operation at Marchlewski for the production of xanthates on a semitechnical basis as an admixture for flotation blende and galena, also for copper. This small factory, the only one of its kind in Poland, resembles a reactor and is located some 500 meters away from the works because of the danger of explosion. It is provided with more than a hundred lightning conductors. Production started at the end of 1954 with an output of 250 kg. daily; present production is more than 500 kg. per day. Production is expected to increase as more reactors are erected. The factory will be enlarged until it can meet all requirements of the Polish market which will be six tons a day. 50X1-HUM