CENTRAL INTELLIGENCE AGENCY

INFORMATION REPORT

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SECURITY INFORMATION

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THE SOURCE EVALUATIONS IN THIS REPORT ARE DEFINITIVE.
THE APPRAISAL OF CONTENT IS TENTATIVE.
(FOR KEY SEE REVERSE)

25X1

New Welding Alloys

1. During the latter part of 1952, Elektrochemisches Kombinat Bitterfeld (EKB) developed a number of new high grade, heat resistant, welding alloys for use under conditions of heavy stress (e.g. valve heads and seats, internal combustion engines).

2. All alloys developed were tested under both arc and electric welding conditions. Particular attention was paid to the effect of the welding process since all the alloys tested were not "Stellite" but had ferrous chrome bases of varying carbon content.

3. For lower temperatures and less exacting conditions, a second series of alloys was developed with a nickel chrome basis. For temperatures up to 450°, chrome alloys with an 0.1 - 0.2% carbon content were produced. These, though relatively soft, have the advantage that the preheating temperature of the parts to be welded can be kept fairly low.

4. Details of the alloys developed are as follows:

F 28 S 1a: 1.6% carbon, 28% chromium, 70.4% iron
F 28 SH 1b: 2.2% carbon, 28% chromium, 69.8% iron
F 28 1c: 3.25% carbon, 28% chromium, 68.75% iron
F 28 1d: 4.1% carbon, 28% chromium, 67.9% iron
F 20 Sd: 4.1% carbon, 20% chromium, 69.9% iron and 6.0% manganese
F 20 S: 1.6% carbon, 20% chromium, 78.4% iron.

25 YEAR RE-REVIEW

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5. F 28 SH, which contains 2% silicon is used in electric welding only and can withstand temperatures of up to 1200°, F 20 SD is difficult to weld because of the formation of scoria, but has a high fluidity and is specially suitable for use in welding hard metals.

6. EKB delivers 90 tons of these alloys monthly. Orders are received for approximately double this quantity but cannot be met because of shortages of chromium.

7. Experiments are also being made at Bitterfeld in the use of molybdenum as a substitute for chromium.

8. Elrasol, previously reported as a synthetic detergent, has now been discovered to be a flux for light alloys.

Other Production

Aluminum

9. Output averaged 95 tons of pure aluminum per day during November and the first half of December.

Titanium

10. No pure titanium was produced, but a certain amount of $T_1 O_2$ was produced.

Beryllium

11. Output ceased during November because of the lack of raw materials.

Tungsten

12. The north factory at Bitterfeld processes tungsten ore of Chinese origin. Output is absorbed mainly by the East German light bulb and radio industry.

Cast Iron

13. Dr. Seeliger (fnu), a scientist employed at Bitterfeld, developed a new cast iron whose tensile strength is claimed to be equal to that of mild steel.