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CENTRAL INTELLIGENCE AGENCY  
INFORMATION REPORT

REPORT

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SUBJECT: Zeiss Oscillation Quartzes

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THIS IS UNEVALUATED INFORMATION

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1. In the past the quartz used by VEB Carl Zeiss, Jena, for the fabrication of oscillation quartzes has been imported

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At present the firm is not receiving enough import quartz to cover its demands. Only between 10 and 20 percent of the imported quartz material can be used for the fabrication of oscillation quartzes; the remainder is unusable because of impurities and "twin formations".

2. Zeiss puts out two sorts of oscillation quartzes:

a. Transversal vibrators (Dickenschwinger), with a frequency range of from 30 MHz to 500 kHz;

b. Longitudinal vibrators (Laengenschwinger), with a frequency range of from 300 kHz to 60 MHz.

Thus far the firm has not been able to fabricate vibrators with a frequency range of around 400 kHz and a kind of vibrator called Biegeschwinger with a frequency below 60 kHz. No quartz of appropriate dimensions could be obtained. All quartzes fabricated by Zeiss have one of the following three tolerances: plus minus ten power minus three Hz; plus minus ten power minus four Hz; plus minus two times ten power minus five Hz. Through accurate application of AT cuts and BT cuts, the temperature constant of the quartzes is held to below five times ten power minus six centigrades.

3. The following are the types of oscillation quartzes now in production at Zeiss:

Diameter in Millimeters	Cut Angle with Optical Axis	Frequency Range	Remarks
11	plus 41 degrees	30 MHz to 20 MHz	
12	plus 41 degrees	20 MHz to 8 MHz	
16	minus 54 degrees and 55 minutes	8 MHz to 6 MHz	

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<u>Diameters in Millimeters</u>	<u>Cut Angle with Optical Axis</u>	<u>Frequency Range</u>	<u>Remarks</u>
17	minus 54 degrees and 55 minutes	6 MHz to 2 MHz	
25	minus 54 degrees and 55 minutes	2 MHz to 600 kHz	
-	plus 95 degrees	300 kHz to 60 kHz	In vacuum holder
18.3	minus 54 degrees and 55 minutes	500 kHz	

4. Attempts made by Zeiss to replace quartz with Seignette salt, which has better piezo-electrical qualities than quartz, have failed because the salt cannot be processed well mechanically and thus does not attain a sufficient degree of frequency stabilization; also it is too sensitive to humidity.

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