UBJECT Ultrasonic Research and Development at Zeiss Jena NO. OF PAGES 2 25X1 NO. OF ENCLS. 2 (1 pamphle (USTED BELOW) 2 photostat SUPPLEMENT TO REPORT NO. THIS IS UNEVALUATED INFORMATION 1. Ultrasonic research and development has been carried out since 1949 in the Physical Laboratory of V.B Carl Zeiss, Jena, under the direction of Prof. Dr. Kurt Schuster, formerly a professor at Breslau university. Prof. Schuster's assistant is Dr. (inu) Tromwler; other collaborators in the field are Dr. (fnu) Liebl and Fräulein (fnu) Kadura. 2. Prof. Schuster and his collaborators have developed an "Ultra-sound jar" (Ultraschalltopf) for physical, chemical and biological research. In addition to its usefulness in general research, the device can be used particularly for: a) Production of stable emulsions; b) Dispersing solid parts in liquids; c) Fission of high-polymeric molecules; d) De-gasification of liquids; e) Production of liquids moke (Nebel);	114 1 61	LLOFAX		CENTRAL INTELLIGENCE		REPORT NO.
UBJECT Ultrasonic Research and Development at Zeiss Jema NO. OF PAGES 2 1. NO. OF ENGLS. 2 (1 page) 2 photostat 25X1 25X1 SUPPLEMENT TO REPORT NO. THIS IS UNEVALUATED INFORMATION 1. Ultrasonic research and development has been carried out since 1949 2 in the Physical Laboratory of V.B. Carl Zeiss, Jena, under the direction of Prof. Dr. Kurt Schuster, formerly a professor at Breaklu university, Prof. Schuster's assistant is Dr. (fnu) Trempler; other collaborators in the field are Dr. (fnu) Liebl and Frauleán (fnu) Kadura. 2. Prof. Schuster and his collaborators have developed an "Ultra-sound jar" (Ultraschalltopf) for physical, chemical and biological research. In addition to its usefulness in general research, the device can be used particularly for all physical parts in liquids; b) Pispersing solid parts in liquids; c) Fission of high-polymeric molecules; d) De-gasification of high-polymeric molecules; d) De-gasification of high-divendent and delivered to Zeiss by PFT Leipzig. The jar is filled with water in which a container is suspended. The container holds oil, the so-called oil bath, A circular quartz plate is attached in the interior of the container. The disneter of the quartz plate is 8 centimeters. The quartz is of a special but unidentific type. The quartz is protected against damage by a metal membrane. Following are data on the jar: Sound beam diameter Sound beam				FORMATION	REPORT	CD NO.
25X1 25X1 25X1 SUPPLEMENT TO REPORT NO. 1. Ultrasonic research and development has been carried out since 1949 in the Physical Laboratory of V.B Carl Zeiss, Jena, under the direction of Prof. Dr. Kurt Schuster, formerly a professor at Breakla university. Prof. Schuster's assistant is Dr. (fnu) Themsler, other callaborators in the field are Dr. (fnu) Liebl and Fraulein (fnu) Kadura. 2. Prof. Schuster and his collaborators have developed an "Ultra-aound jar" (Ultraschalltopf) for physical, chemical and biological research. In addition to its usefulness in general research, the device can be used porticularly for: a) Production of stable emulsions; b) Dispersing solid parts in Houds; c) Fission of high-polymeric molecules; d) Degasification of liquids; e) Production of liquids; e) Production of liquids snoke (Nebel); f) Aging of wine and liquor; g) Medical applications. 3. The ultrasound jar is operated by a high-frequency generator of about 1.5 kilowatts which is produced and delivered to teiss by EFT Leipzig. The jar is filled with water in which a container is suspended. The container holds oil, the so-called oil bath, a circular ourity plate is a cartiecters. The quarts is of a special but unidentific type. The quartz is protected against damage by a metal membrane, Folioxing are data on the jar: Sound beam diameter. Sound surface. Polio With Total height. To malegat diameter. Sound surface.	OUNTRY	East	Jermany			DATE DISTR. 3 November 1952
1. Ultrasonic research and development has been carried out since 1949 in the Physical Laboratory of V.B Carl Zeise, Jena, under the direction of Prof. Dr. Kurt Schuster, formerly a professor at Breslau university. Prof. Schuster's assistant is Dr. (inu) Tromaler; other collaborators in the field are Dr. (fnu) Liebl and fraulein (fnu) Kadura. 2. Prof. Schuster's assistant is Dr. (inu) Tromaler; other collaborators in the field are Dr. (fnu) Liebl and fraulein (fnu) Kadura. 2. Prof. Schuster and his collaborators have developed an "Ultra-sound jar" (Ultraschalltopf) for physical, chemical and biological research. In addition to its usefulness in general research, the device can be used particularly for: a) Production of stable emulsions; b) Dispersing solid parts in Livuids; c) Fission of high-polymeric molecules; d) De-gasification of liquids; e) Production of liquids moke (Kabel); f) Aging of whan and liquor; g) Medical applications. 3. The ultrasound jar is operated by a high-frequency generator of about 1.5 kilowatts which is produced and delivered to Leiss by RFT Leipzig. The jar is filled with water in which a container is suspended. The container holds oil, the so-called oil bath A circular ouartz plate is attached in the interior of the container. The diameter of the quartz plate is a centimeters. The quartz is of a special but unidentific type. The quartz is protected against damage by a metal membrane. Following are data on the jar: Sound surface — shout AO squ re on Maximum Hydragest diameter — shout AO squ re on Maximum Hydragest diameter — shout AO squ re on Maximum Hydragest diameter — 300 mm Largest diameter — 300 mm	UBJECT	Ultra	sonic Resea	nch and Development	at Zeiss Jena	NO. OF PAGES 2
1. Ultrasonic research and development has been carried out since 1949 in the Physical Laboratory of V.B Carl Zeiss, Jena, under the direction of Prof. Dr. Kurt Schuster, formerly a professor at Breslau university. Prof. Schuster's assistant is Dr. (Inu) Tromaler; other collaborators in the field are Dr. (Inu) Liebl and Fraulein (Inu) Kadura. 2. Prof. Schuster and his collaborators have developed an "Ultra-sound jar" (Ultraschalltopt) for physical, chemical and biological research, in addition to its usefulness in general research, the device can be used particularly for: a) Production of stable emulsions; b) Dispersing solid parts in Iludds; c) Fission of high-polymeric molecules; d) Degasification of liquid smoke (Nebel); f) Aging of wine and liquor; g) Medical applications. 3. The ultrasound jar is operated by a high-frequency generator of about 1.5 kilowatts which is produced and delivered to zeiss by EFT Leipzig. The jar is filled with water in which a container is suspended. The container holds oil, the so-called oil bath, a circular cuartz plate is attached in the interior of the container. The diameter of the quartz plate is certimeters. The quartz is of a special but unidentific type. The quarta is protected against damage by a metal membrane. Following are data on the jar: Sound beam diameter			·	25X1		NO. OF ENCLS. © 2 (1 pamphlet (LISTED BELOW) 2 photostate
1. Ultrasonic research and development has been carried out since 1949 in the Physical Laboratory of V.B Carl Zeiss, Jene, under the direction of Frof. Dr. Kurt Schuster, formerly a professor at Bresleu university. Prof. Schuster's assistant is Dr. (fnu) Tromaler; other collaborators in the field are Dr. (fnu) Liebl and Fräulein (fnu) Kadura. 2. Prof. Schuster and his collaborators have developed an "Ultra-sound jar" (Ultraschalltopf) for physical, chemical land biological research. In addition to its usefulness in general research, the device can be used particularly for: a) Production of stable emulsions; b) Dispersing solid parts in liquids; c) Fission of high-polymeric molecules; d) De-gasification of liquids smoke (Nebel); f) Aging of wine and liquor; g) Medical applications. 3. The ultrasound jar is operated by a high-frequency generator of about 1.5 kilowatts which is produced and delivered to Zeiss by RFT Leipzig. The jar is filled with water in which a container is suspended. The container holds oil, the so-called oil bath. A circular courtz plate is attached in the interior of the container. The diameter of the quartz plate is 8 centimeters. The quartz is of a special but unidentific type. The quartz is protected against damage by a metal membrane. Following are data on the jar: Sound beam diameter				25X1		
1. Ultrasonic research and development has been carried out since 1949 in the Physical Laboratory of V.B Carl Zeiss, Jene, under the direction of Front. Prof. Pr. Kurt Schuster, formerly a professor at Breslau university. Frof. Schuster's assistant is Dr. (fnu) Trommler; other collaborators in the field are Dr. (fnu) liebl and Fräulein (fnu) Kadura. 2. Prof. Schuster and his collaborators have developed an "Ultra-sound jar" (Ultraschalltopf) for physical, chemical land biological research. In addition to its usefulness in general research, the device can be used perticularly for: a) Production of stable emulsions; b) Dispersing solid parts in liquids; c) Fission of high-polymeric molecules; d) Degasification of liquids smoke (Nebel); f) Aging of wine and liquor; g) Medical applications. 3. The ultrasound jar is operated by a high-frequency generator of about 1.5 kilowatts which is produced and delivered to Zeiss by RFT Leipzig. The jar is filled with water in which a container is suspended. The container holds oil, the so-called oil bath. A circular courtz plate is attached in the interior of the container. The diameter of the quartz plate is 8 centimeters. The quartz is of a special but unidentific type. The quartz is protected against damage by a metal membrane. Following are data on the jar: Sound beam diameter	· · · · · · · · · · · · · · · · · · ·					,
in the Physical Laboratory of V.B Carl Zeiss, Jena, under the direction of Prof. Dr. Kurt Schuster, formerly a professor at Breslau university. Prof. Schuster's assistant is Dr. (fnu) Trommler; other collaborators in the field are Dr. (fnu) liebl and Fräulein (fnu) Kadura. 2. Prof. Schuster and his collaborators have developed an "Ultra-sound jar" (Ultraschalltopf) for physical, chemical and biological research. In addition to its usefulness in general research, the device can be used particularly for: a) Production of stable emulsions; b) Dispersing solid parts in liquids; c) Fission of high-polymeric molecules; d) De-gasification of liquids; e) Production of liquid smoke (Nebel); f) Aging of wine and liquor; g) Medical applications. 3. The ultrasound jar is operated by a high-frequency generator of about 1.5 kilowatts which is produced and delivered to Zeiss by RFT Leipzig. The jar is filled with water in which a container is suspended. The container holds oil, the so-called oil bath. A circular quartz plate is attached in the interior of the container. The diameter of the quartz plate is 8 centimeters. The quartz is of a special but unidentific type. The quartz is protected against damage by a metal membrane, Following are data on the jar: Sound beam diameter	OF THE UNITED ST AND 194, OF THE ATION OF ITS CO	TATES, WITHI	n the weaning of the as amended. Its tri	ANGMISSION OR REVEL-	THIS IS UNE	VALUATED INFORMATION
in the Physical Laboratory of VaB Carl Zeiss, Jena, under the direction of Prof. Dr. Kurt Schuster, formerly a professor at Breslau university. Prof. Schuster's assistant is Dr. (fnu) Trommeler; other collaborators in the field are Dr. (fnu) Liebl and Fräulein (fnu) Kadura. 2. Prof. Schuster and his collaborators have developed an "Ultra-sound jar" (Ultraschalltopf) for physical, chemical and biological research. In addition to its usefulness in general research, the device can be used particularly for: a) Production of stable emulsions; b) Dispersing solid parts in liquids; c) Fission of high-polymeric molecules; d) De-gasification of liquids; e) Production of liquid smoke (Nebel); f) Aging of wine and liquor; g) Medical applications. 3. The ultrasound jar is operated by a high-frequency generator of about 1.5 kilowatts which is produced and delivered to Zeiss by RFT Leipzig. The jar is filled with water in which a container is suspended. The container holds oil, the so-called oil baths. A circular quartz plate is attached in the interior of the container. The diameter of the quartz plate is 8 centimeters. The quartz is of a special but unidentific type. The quartz is protected against damage by a metal membrane, Following are data on the jar: Sound beam diameter						
in the Physical Laboratory of V.B Carl Zeiss, Jena, under the direction of Prof. Dr. Kurt Schuster, formerly a professor at Breslau university. Prof. Schuster's assistant is Dr. (fnu) Trommler; other collaborators in the field are Dr. (fnu) liebl and Fräulein (fnu) Kadura. 2. Prof. Schuster and his collaborators have developed an "Ultra-sound jar" (Ultraschalltopf) for physical, chemical and biological research. In addition to its usefulness in general research, the device can be used particularly for: a) Production of stable emulsions; b) Dispersing solid parts in liquids; c) Fission of high-polymeric molecules; d) De-gasification of liquids; e) Production of liquid smoke (Nebel); f) Aging of wine and liquor; g) Medical applications. 3. The ultrasound jar is operated by a high-frequency generator of about 1.5 kilowatts which is produced and delivered to Zeiss by RFT Leipzig. The jar is filled with water in which a container is suspended. The container holds oil, the so-called oil bath. A circular quartz plate is attached in the interior of the container. The diameter of the quartz plate is 8 centimeters. The quartz is of a special but unidentific type. The quartz is protected against damage by a metal membrane, Following are data on the jar: Sound beam diameter						
jar" (Ultraschalltopf) for physical, chemical and biological research. In addition to its usefulness in general research, the device can be used particularly for: a) Production of stable emulsions; b) Dispersing solid parts in liquids; c) Fission of high-polymeric molecules; d) De-gasification of liquids; e) Production of liquid smoke (Nebel); f) Aging of wine and liquor; g) Medical applications. 3. The ultrasound jar is operated by a high-frequency generator of about 1.5 kilowatts which is produced and delivered to Zeiss by RFT Leipzig. The jar is filled with water in which a container is suspended. The container holds oil, the so-called oil bath. A circular quartz plate is attached in the interior of the container. The diameter of the quartz plate is 8 centimeters. The quartz is of a special but unidentific type. The quartz is protected against damage by a metal membrane. Following are data on the jar: Sound beam diameter		10	in the Phy	sical Laboratory of	VaB Carl Zeiss	, Jena, under the direction
b) Dispersing solid parts in liquids; c) Fission of high-polymeric molecules; d) De-gasification of liquids; e) Production of liquid smoke (Nebel); f) Aging of wine and liquor; g) Medical applications. 3. The ultrasound jar is operated by a high-frequency generator of about 1.5 kilowatts which is produced and delivered to Zeiss by RFT Leipzig. The jar is filled with water in which a container is suspended. The container holds oil, the so-called oil bath. A circular quartz plate is attached in the interior of the container. The diameter of the quartz plate is 8 centimeters. The quartz is of a special but unidentific type. The quartz is protected against damage by a metal membrane, Following are data on the jar: Sound beam diameter Sound surface Maximum high-frequency voltage at 800 kHz			Prof. Schu	ster's assistant is	Dr. (fnu) Tron	mler; other collaborators
1.5 kilowatts which is produced and delivered to zeiss by RFT Leipzig. The jar is filled with water in which a container is suspended. The container holds oil, the so-called oil bath. A circular quartz plate is attached in the interior of the container. The diameter of the quartz plate is 8 centimeters. The quartz is of a special but unidentified type. The quartz is protected against damage by a metal membrane, Following are data on the jar: Sound beam diameter		2.	Prof. Schuin the fie Prof. Schujar" (Ultr In addition	ster's assistant is ald are Dr. (fnu) Lie ster and his collabo aschalltopf) for phy on to its usefulness	Dr. (fnu) Trom bl and Fräulei prators have de vsical, chemica	mler; other collaborators in (fnu) Kadura. eveloped an "Ultra-sound il and biological research.
Sound surfaceabout.40 square cm Maximum high-frequency voltage at 800 kHz		2.	Prof. Schuin the fie Prof. Schujar" (Ultr In additionated partial a) Productionated partial b) Disperc) Fissionated De-gas e) Productionated productionated productionated partial f) Aging	ster's assistant is eld are Dr. (fnu) lies aster and his collaborated aschalltopf) for phy on to its usefulness cularly for: etion of stable emuls raing solid parts in on of high-polymeric diffication of liquids etion of liquid smoke of wine and liquor;	Dr. (fnu) Tromebl and Fraulei orators have desical, chemical in general resions; liquids; molecules;	mler; other collaborators in (fnu) Kadura. eveloped an "Ultra-sound il and biological research.
			Prof. Schuin the field in the f	ster's assistant is ald are Dr. (fnu) lies as a schall topf) for phy on to its usefulness cularly for: tion of stable emuls sing solid parts in an of high-polymeric diffication of liquids section of liquids so wine and liquor; all applications. sound jar is operated that which is produce if filled with water is holds oil, the so-cased in the interior of the is 8 centimeters, a quartz is protected.	Dr. (fnu) Tromebl and Fräulei prators have de vsical, chemica in general resions; liquids; molecules; s; e (Nebel); de and delivered and delivered which a contained oil bath. I the contained in against damage of the damage of	DO NOT Concernations of about the diameter of the circular quartz plate.
			Prof. Schuin the field in the f	ster's assistant is ald are Dr. (fnu) lies aschalltopf) for phy in to its usefulness cularly for: tion of stable emuls raing solid parts in mof high-polymeric diffication of liquid smoke of wine and liquor; applications. Sound jar is operated that which is produced that which is produced in the interior of the is 8 centimeters, a quartz is protected are data on the jar: beam diameter	Dr. (fnu) Tromebl and Fräulei prators have de vsical, chemica in general resisions; liquids; molecules; se (Nebel); de high-freed and delivered in which a contained oil bath. The contained in against damages; de large at 800 kl.	DO NOT CACHAT equency generator of about ed to Zeiss by RFT Leipzig. Zainer is suspended. The A circular quartz plate The diameter of the sof a special but unidentified by a metal membrane, 74 mm 20 mm 20 mm 300 mm 20 mm
CLASSIFICATION SECRET			Prof. Schuin the field in the f	ster's assistant is ald are Dr. (fnu) lies aschalltopf) for phy in to its usefulness cularly for: tion of stable emuls raing solid parts in mof high-polymeric diffication of liquid smoke of wine and liquor; applications. Sound jar is operated that which is produced that which is produced in the interior of the is 8 centimeters, a quartz is protected are data on the jar: beam diameter	Dr. (fnu) Tromebl and Fräulei prators have de vsical, chemica in general resisions; liquids; molecules; se (Nebel); de high-freed and delivered in which a contained oil bath. The contained in against damages; de large at 800 kl.	DO NOT CACHAT equency generator of about ed to Zeiss by RFT Leipzig. Zainer is suspended. The A circular quartz plate The diameter of the sof a special but unidentified by a metal membrane, 74 mm 20 mm 20 mm 300 mm 20 mm

"he ultra-sound is directed upon a cup of 200 millimeter height and an inner diameter of 76 millimeters; the cup has a capacity of 500 cubic centimeters and is placed in a holder (Becherfuss) situated directly over the sound beam. The height of the holder is about 26 millimeters.

4. Following are data on the RFT generator (Ultraschall Industriegenerator Typ 602):

- 5. Zeiss has delivered a few samples of the ultrasound jar to DDR research institutes; as yet the plant is not in a position to sell it on the market because of the shortage of quartz suitable for the device. Production of one quartz plate for the jar requires about one kilogram of quartz.
- 6. Prof. Schuster and his collaborators have in the past two years carried out research on ultrasonic generators, particularly piezo-electrical ultra-sound generators (quartz, turmaline, barium titanate). They have also done research on ultra-sound generated by electro-acoustic sirens and whistles, magneto-strictive and electro-strictive ultra-sound generators.
- 7. In 1949, Prof. Schuster, together with Trommler, Liebl and Kadura started to study ultra-sound "photography" according to the "relief procedure" (Ultraschall-optische Abbildung nach dem Keliefbild-Verfahren). The basic idea consists of putting the object to be photographed into a liquid and exposing it to ultrasonic pressure. This pressure together with the effect of gravity causes a rise in the surface of the liquid; this rise depends on the power of ultra-sound. In this manner, the sound picture is transformed into a relief picture. The relief picture is made visible on a screen or ground-glass plate by a Schlieren optical device.

SECRET