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UNITED STATES TARIFF COMMISSION

**CERTAIN COMPONENTS OF CATV AND MATV SYSTEMS:
WORKERS OF THE
PHILADELPHIA, PA., PLANT OF
JERROLD ELECTRONICS CORP.,
SUBSIDIARY OF GENERAL INSTRUMENT CORP.**

**Report to the President
on Investigation No. TEA-W-164
Under Section 301(c)(2) of the Trade Expansion Act of 1962**



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UNITED STATES TARIFF COMMISSION

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Note.--The whole of the Commission's report to the President may not be made public since it contains certain information the publication of which would result in the disclosure of the operation of an individual firm. This published report is the same as the report to the President, except that the above-mentioned information has been omitted. Such omissions are indicated by asterisks.

REPORT TO THE PRESIDENT

U.S. Tariff Commission,
January 30, 1973.

To the President:

In accordance with section 301(f)(1) of the Trade Expansion Act of 1962 (76 Stat. 885), the U.S. Tariff Commission herein reports the findings of an investigation made under section 301(c)(2) of the act in response to a petition filed by a group of workers.

On December 1, 1972, the Tariff Commission received a petition from the United Electrical, Radio and Machine Workers of America for a determination of eligibility to apply for adjustment assistance on behalf of the workers and former workers of the Philadelphia, Pa., plant of the Jerrold Electronics Corp., a subsidiary of the General Instrument Corp., Newark, N.J. The Commission instituted the investigation No. TEA-W-164, on December 8, 1972, to determine whether, as a result in major part of concessions granted under trade agreements, articles like or directly competitive with matching transformers; coils; taps, splitters and directional couplers; amplifiers and preamplifiers; and attenuators (of the types provided for in items 682.05, 682.60, 685.20, and 685.90 of the Tariff Schedules of the United States) produced by said firm are being imported into the United States in such increased quantities as to cause, or threaten to cause, the unemployment or underemployment of a significant number or proportion of the workers of General Instrument Corp. or an appropriate subdivision thereof.

Public notice of the investigation was given by posting copies of the notice at the office of the Commission in Washington, D.C., at the New York City office, and by publication in the Federal Register of December 13, 1972 (37 F.R. 26558). No public hearing was requested and none was held.

The information herein was obtained from Jerrold Electronics Corp., other domestic producers, importers, and distributors of the aforementioned articles, trade associations, the United Electrical, Radio and Machine Workers of America, and from the Commission's files.

Finding of the Commission

On the basis of its investigation, the Commission finds (Commissioner Moore and Ablondi dissenting) that articles like or directly competitive with matching transformers; coils; taps, splitters and directional couplers; amplifiers and preamplifiers; and attenuators (of the types provided for in items 682.05, 682.60, 685.20 and 685.90 of the Tariff Schedules of the United States) produced by General Instrument Corp. or an appropriate subdivision thereof are not, as a result in major part of concessions granted under trade agreements, being imported into the United States in such increased quantities as to cause, or threaten to cause, the unemployment or underemployment of a significant number or proportion of the workers of such firm or an appropriate subdivision thereof.

Views of Chairman Bedell, Vice Chairman Parker,
and Commissioners Leonard and Young

This investigation relates to a petition for adjustment assistance under section 301(c)(2) of the Trade Expansion Act of 1962, on behalf of the workers and former workers of the Philadelphia, Pa., plant of the Jerrold Electronics Corp., a subsidiary of the General Instrument Corp., Newark, N. J. The workers were engaged in the production of certain components of cable television equipment and master antenna television equipment (hereinafter referred to as CATV) and coils used therein.

General Instrument Corp. acquired Jerrold in 1967, prior to the implementation of the Kennedy Round tariff concessions. At that time, Jerrold was producing CATV components and coils. As a result of the Kennedy Round, the rates of duty on the CATV components except for matching transformers named in the investigation were reduced in 1968 and in four additional annual steps by approximately 5 to 8.5 percentage points in total. Matching transformers were not the subject of a Kennedy Round concession. * * *

* * *. By this time the industry had developed an excess capacity because CATV systems had not expanded to the extent many industry sources had predicted. During this period, there were delays in the Federal Communications Commission's granting of licenses for CATV systems and in clarifying operating rules.

* * *, Jerrold transferred production of * * * from its Philadelphia, Pa., plant to a facility in Nogales, Mexico. * * *. * * *, Jerrold decided to transfer production of * * * from Philadelphia to a facility in Chicopee, Mass. * * *. * * *, by transferring certain operations * * *, the company was able to avoid the adverse conditions being experienced at Philadelphia * * *.

Employment at the Philadelphia plant diminished as Jerrold transferred production to other plants. * * * workers lost their jobs at the Philadelphia plant. Employment at the Chicopee plant, * * *, had increased to approximately * * * workers and at the Nogales plant, to about * * * workers.

* * * * *

On the basis of evidence obtained in the investigation, we have concluded that the closing of Jerrold's Philadelphia plant and its shift to sourcing certain CATV components * * * from abroad were due to several factors among which trade-agreement concessions were of little or no significance. * * *. We believe that the Philadelphia plant was not closed by reason of increased imports, but rather that the closing of the Philadelphia plant and company policies resulted in increased imports. The example of Jerrold's * * * operation at Chicopee indicates that production of CATV components in the United States is competitive and not affected

materially by imports. In fact, Jerrold, in its Chicopee production, has a tariff advantage over foreign production in that no duty is applied.

On the basis of the foregoing, we find that certain CATV components and coils are not, as a result in major part of concessions granted under trade agreements, being imported into the United States in such increased quantities as to cause, or threaten to cause, unemployment or underemployment of a significant number or proportion of the workers of General Instrument Corp., or an appropriate subdivision thereof.

Dissenting Views of Commissioner Moore 1/

This investigation was conducted pursuant to Section 301(c)(2) of the Trade Expansion Act in response to a petition for a determination of eligibility to apply for adjustment assistance filed on behalf of the workers formerly employed at the Philadelphia, Pa., plant of Jerrold Electronics Corp., a division of General Instrument Corp. The plant closed in January 1973.

The articles formerly manufactured at the Philadelphia plant of Jerrold Electronics Corp. (Jerrold) were components of cable television and master antenna television equipment (CATV) and coils used in the production of such components. * * *. It is my opinion, therefore, that the impact of imports of components and coils on the operation of this plant is the primary consideration here.

Until 1970, the Philadelphia plant was the only manufacturing facility of the firm at which these articles were made. In 1970 production of * * * was initiated at Nogales, Mexico, * * *. * * *. In 1971, production of * * * was initiated at a newly acquired facility at Chicopee, Mass. * * *. By July 1972, all manufacturing operations of the Philadelphia plant except * * * * * had been moved to Nogales or Chicopee. * * *. The value of Jerrold's imports in 1971 accounted for * * * percent of the total reported value of imports of CATV components.

1/ Commissioner Ablondi concurs in the result.

* * *. If the tariff rate had been 35 percent ad valorem, as it was before tariff concessions, the additional cost of importing, principally duty, would have precluded the transfer of production from the United States. Thus, the closing of the Philadelphia plant and the resultant unemployment of its workers was caused by the increased imports resulting from trade-agreement concessions which made it feasible for Jerrold to manufacture CATV components and coils abroad.

I conclude, therefore, that the former workers at the Philadelphia plant of Jerrold Electronics Corp. meet the requirements of the Trade Expansion Act to apply to the U.S. Department of Labor for adjustment assistance.



INFORMATION OBTAINED IN THE INVESTIGATION

Description and Uses

Cable television and master antenna television equipment (hereinafter referred to collectively as CATV) consist of systems and devices for receiving signals from VHF and UHF television stations and FM radio stations and distributing those signals on a closed network, usually with cable as the vehicle. The CATV currently supplied has the capability of providing a two-way information channel within the closed network, but such capabilities are little used at present.

Equipment used in CATV include one or more antennas, master receivers, and studio and master distribution devices, as well as test equipment, hardware (such as poles, messengers, clamps, and other mechanical devices), and electronic distribution devices (such as taps, splitters, directional couplers, amplifiers, preamplifiers, attenuators, and matching transformers). The articles covered in this investigation include the aforementioned electronic distribution devices and the coils that are used in many of those devices. Such articles are limited to those in radio frequency (RF) distribution systems, which comprise the great bulk of CATV systems.

For purposes of this investigation the articles named were grouped into five categories of distribution devices, i.e., taps, splitters, and directional couplers; amplifiers and preamplifiers; attenuators; matching transformers; and all other devices. Coils were treated as a

separate grouping from distribution devices inasmuch as coils are included as parts in most such devices.

Taps, splitters, and directional couplers are principally connecting devices. They consist, generally, of a small metal box having one or more input and output connectors. Taps are the devices to which the consumer's receiver is connected; they are also used to connect distribution lines. Some taps contain merely a feed-through connection between the input and output connectors. Other taps as well as splitters and directional couplers contain resistors, capacitors, and/or coils (passive electronic components) for conditioning the signal. Such signal conditioning may be for the purpose of reducing a signal to a usable level, dividing a signal such as UHF from VHF as in a splitter, or isolating sections of the distribution system to obviate reflections and interference such as in a directional coupler.

Amplifiers and preamplifiers amplify the signal in the RF distribution system. They are usually fabricated on a printed circuit board and consist of active (including integrated circuits) and passive electronic components. Depending on the specific function, they may be fabricated on a printed circuit board measuring from a few to 75 or more square inches. Such boards are mounted on a supporting frame and frequently, as in all electronic CATV in outside distribution

systems, are mounted in protective metal containers designed to avert destruction by vandalism and the elements. Preamplifiers are generally used to amplify weak signals and are usually designed very carefully to avoid problems encountered in signal conditioning. Amplifiers are used principally to boost a signal to maintain a useable level along a length of distribution line. The principal difference in use between amplifiers and preamplifiers is the strength of the signal amplified.

Attenuators reduce the signal level and are used anywhere in CATV where the signal level is too high such as at a tap or a monitoring or measuring point. They often consist of a small metal box or cylinder containing, principally, a resistor or resistors with coils or capacitors as necessary.

Matching transformers are used to connect circuits of different impedance in order to avoid reflections, interference, and signal loss. A typical matching transformer connects a signal on a coaxial line (a common impedance of 75 ohms) to a twin lead line (a common impedance of 300 ohms). Typically, they consist of a small metal box containing, principally, a transformer (two interacting coils) and other passive electronic components as necessary.

Coils are wound wire of a shape and length determined by the amount of inductance required in a circuit. Coils may be wound without a core, with an inert core, or with a magnetic core, depending on space limitations, the required inductance, and the rigidity of the wire used. Coils are widely used in CATV, as well as in other electronic and electrical equipment. Coils may be a part of all of the previously mentioned products.

U.S. Tariff Treatment

CATV was not an article of commerce at the time of the enactment of the Tariff Act of 1930 and, consequently, was not specifically provided for in that legislation. Had CATV components existed, they would have been dutiable under paragraph 353 at 35 percent ad valorem. As import trade developed for CATV in the mid-to-late 1960's, the various devices in CATV were classified under several different TSUS numbers.

Taps, splitters, directional couplers, amplifiers, preamplifiers, and attenuators are classified under TSUS item 685.20 unless used in a circuit which combines alternating current and RF transmission; if used in that manner, they would be classified under TSUS item 685.90. Matching transformers are classified under TSUS item 682.05 as transformers of less than 1 KVA, and coils are classified under TSUS item 682.60 as inductors. The rate history of the above-mentioned devices for the period 1930-72 is shown in the following table.

Certain devices used in CATV: U.S. rates of duty, 1930-72

(In percent ad valorem)					
Effective date	Change in rate of duty on TSUS item--				Authority
	682.05	682.60	685.20	685.90	
June 18, 1930--	35	35	35	35	:Tariff Act of 1930.
Jan. 1, 1939--	25	25	25	25	:Bilateral with UK.
Jan. 1, 1948--	15	15	15	<u>1/</u>	:GATT <u>2/</u>
Jan. 6, 1951--	12.5	<u>1/</u>	12.5	17.5	:GATT
June 30, 1956--	<u>1/</u>	<u>1/</u>	11.5	<u>1/</u>	:GATT
June 30, 1957--	<u>1/</u>	<u>1/</u>	11	<u>1/</u>	:GATT
June 30, 1958--	<u>1/</u>	<u>1/</u>	10.5	<u>1/</u>	:GATT
July 1, 1962--	<u>1/</u>	<u>1/</u>	10	<u>1/</u>	:GATT
Jan. 1, 1968--	<u>1/</u>	13	9	15.5	:GATT
Jan. 1, 1969--	<u>1/</u>	12	8	14	:GATT
Jan. 1, 1970--	<u>1/</u>	10	7	12	:GATT
Jan. 1, 1971--	<u>1/3/</u>	<u>3/ 9</u>	<u>3/ 6</u>	<u>3/ 10</u>	:GATT
Jan. 1, 1972--	<u>1/</u>	7.5	5	8.5	:GATT

1/ No change.

2/ General Agreement on Tariffs and Trade.

3/ An additional 10-percent import duty was imposed for the period Aug. 16-Dec. 19, 1971 (Presidential Proclamations 4074 and 4098).

In addition to the fully dutiable imports entered under the TSUS items shown in the table above, some CATV is entered under TSUS item 807.00--which provides for imported articles assembled in whole or in part of U.S.-fabricated components. Under that provision, which has never been the subject of a trade-agreement concession, articles are dutiable only to the extent of the value added abroad; the value of the U.S.-fabricated components returned is duty exempt.

U.S. Producers

The CATV industry was started in the late 1940's with the installation by television-set dealers of antennas on the tops of high hills or mountains in western Pennsylvania for use with receivers in the valleys below. This method was the only way in which television reception could be provided to the communities located in the valleys; it also enabled the dealers to obtain a share of the then new and rapidly growing television market. From this modest beginning, CATV has developed into an industry in which total shipments in 1972 have been estimated at \$390 million. ^{1/}

Currently, there are believed to be literally thousands of domestic firms manufacturing CATV, ranging from firms manufacturing one component to those producing complete CATV systems. Most large producers and many independent contractors install CATV systems, which account for a large share of the value of sales in the industry. Some large domestic producers also import CATV components. According to industry sources, the firms accounting for well over three-fourths of U.S. production, exports, and imports are shown in the following table.

^{1/} Estimated by the U.S.-Department of Commerce, U.S. Industrial Outlook 1972.

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* * * * *

U.S. Consumption and Trade in CATV Components

Published data are not available on U.S. consumption, shipments, exports, or imports of CATV components. The major U.S. producers, exporters, and importers of such articles supplied data to the Commission on their output and input. Based on trade estimates of the size of the U.S. market, the data reported to the Commission are believed to represent at least * * * percent of aggregate consumption of the named CATV components. While not complete, the data are roughly indicative of the trend of U.S. consumption, shipments, exports, and imports of the products involved and the relationship of domestic shipments and imports in the U.S. market.

U.S. consumption

The value of reported apparent U.S. consumption of CATV components named in this investigation increased from \$17.4 million in 1967 to \$39.7 million in 1971; the value for January-June 1972 was \$21.2 million, or 24 percent greater than that for January-June 1971 (table 1). As measured by value, consumption in four of five categories more than doubled during 1967-71 (tables 2 to 7). The exception was in matching transformers, the value of which fluctuated irregularly between \$1.6 million and \$2.8 million during the period (table 5).

As measured by the share of reported apparent U.S. consumption supplied, imports of CATV components fluctuated between * * * percent in 1967 and * * * percent in 1970. * * *.

The foregoing ratios varied considerably among the five different categories of components. Imports of amplifiers and preamplifiers accounted for * * * percent of the value of consumption in 1971, whereas the comparable rates for attenuators and matching transformers were * * * percent and * * * percent, respectively. * * *.

* * * * *

U.S. shipments and exports

The reported value of U.S. shipments of domestically produced CATV components increased from * * * million in 1967 to * * * million in 1970 and declined to * * * million in 1971. The value for January-June 1972 was * * * million, compared with * * * million during the comparable months in 1971. * * *.

Of the five categories of components, the value of shipments of each generally increased during 1967-71 except for matching transformers, which rose from * * * million in 1967 to * * * million in 1968 and then declined to * * * in 1971. * * *.

The value of U.S. exports of CATV components covered in this investigation increased from * * * million in 1967 to * * * million in 1970 before declining to * * * million in 1971 (table 1). The value during January-June 1972, * * * million, was lower than the * * * million recorded for January-June 1971. The value of exports as a share of U.S. shipments increased from * * * percent in 1967 to * * * percent in 1970, before declining to * * * percent in 1971. In January-June 1972 the share was * * * percent, compared with * * * percent for January-June 1971. Amplifiers and preamplifiers accounted for * * * percent to * * * percent of the value of exports in periods for which data were compiled. * * *.

U.S. imports

The reported value of U.S. imports of CATV components covered in this investigation increased from * * * million in 1967 to * * * million in 1970 before rising * * * million in 1971. During January-June 1972 the value was * * * million, a * * * increase over the value during the first half of 1971 (table 1). The * * * major importers were * * *.

The value of imports of each of the five categories of CATV components increased during 1967-71. * * *.

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* * * * *

General Instrument Corp.

General Instrument Corp., the parent firm of Jerrold Electronics Corp., is a multinational conglomerate with headquarters in Newark, N.J. In 1972, it had operations in 12 States and nine foreign countries. Total worldwide sales of the corporation, which is ranked among the largest 500 firms in the United States, amounted to \$276 million during the fiscal year ended February 29, 1972. In fiscal 1972, the corporation employed an average of 23,900 workers throughout the world. The corporation's diverse operations are organized into eight groups. They are the Cable TV Systems and Products Group, the Defense and Engineering Products Group, the Electromechanical Products Group, the Entertainment Electronic Products Group, the Semiconductor Products Group, the Totalisator Systems Group, the Electro-Optical Group, and a Foreign Operations (Group). Several of the corporation's foreign operations operate within the framework of the product-oriented groups rather than the Foreign Operations (Group). Other than Jerrold Electronics Corp., no other domestic group, firm or facility of General Instrument Corp. produces CATV components.

Jerrold Electronics Corp.

The firm

Jerrold Electronics Corp. was incorporated in 1955 and from its inception produced RF equipment. It is one of the pioneers in the production and sale of CATV. In 1967, Jerrold was acquired by General Instrument Corp. (G.I.). * * *.

Jerrold's product line includes some * * * articles, but * * * percent of Jerrold's sales are accounted for by the articles in the petition of the United Electrical, Radio and Machine Workers of America. The other * * * articles, which comprise * * * percent of sales volume, are * * * necessary to complete the line of CATV and MATV systems.

The great bulk of the products manufactured and sold by Jerrold is operated at radio frequency. * * *.

* * *

The production facilities of Jerrold, in addition to Philadelphia, include the Chicopee, Mass., plant and the Nogales, Mexico plant. All of the firm's operations in connection with supplying CATV components to the U.S. market were conducted at Philadelphia until production facilities were established at Nogales * * *. The Chicopee operation was commenced in * * *. When the Philadelphia plant was closed in January 1973, the firm continued domestic production at Chicopee.

Philadelphia, Pa., plant

In 1967, when acquired by G.I., Jerrold was a one-plant firm located in Philadelphia, Pa., engaged in the assembly of a large variety of products used in CATV. The Philadelphia plant is a single structure (four stories) containing * * * square feet of usable production area.

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STATISTICAL APPENDIX



Table 1.--Certain CATV components: U.S. factory shipments, imports for consumption, exports of domestic merchandise, and apparent consumption, 1967-71, January-June 1971, and January-June 1972

Year	Shipments	Imports	Exports	Apparent consumption	Ratio of imports to consumption
	<u>1,000</u> <u>dollars</u>	<u>1,000</u> <u>dollars</u>	<u>1,000</u> <u>dollars</u>	<u>1,000</u> <u>dollars</u>	<u>Percent</u>
1967-----	***	***	***	17,370	***
1968-----	***	***	***	25,018	***
1969-----	***	***	***	28,162	***
1970-----	***	***	***	31,952	***
1971-----	***	***	***	39,732	***
Jan.-June--					
1971-----	***	***	***	17,191	***
1972-----	***	***	***	21,238	***

Source: Compiled from data supplied by major U.S. producers and importers of CATV components in response to U.S. Tariff Commission questionnaires.



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