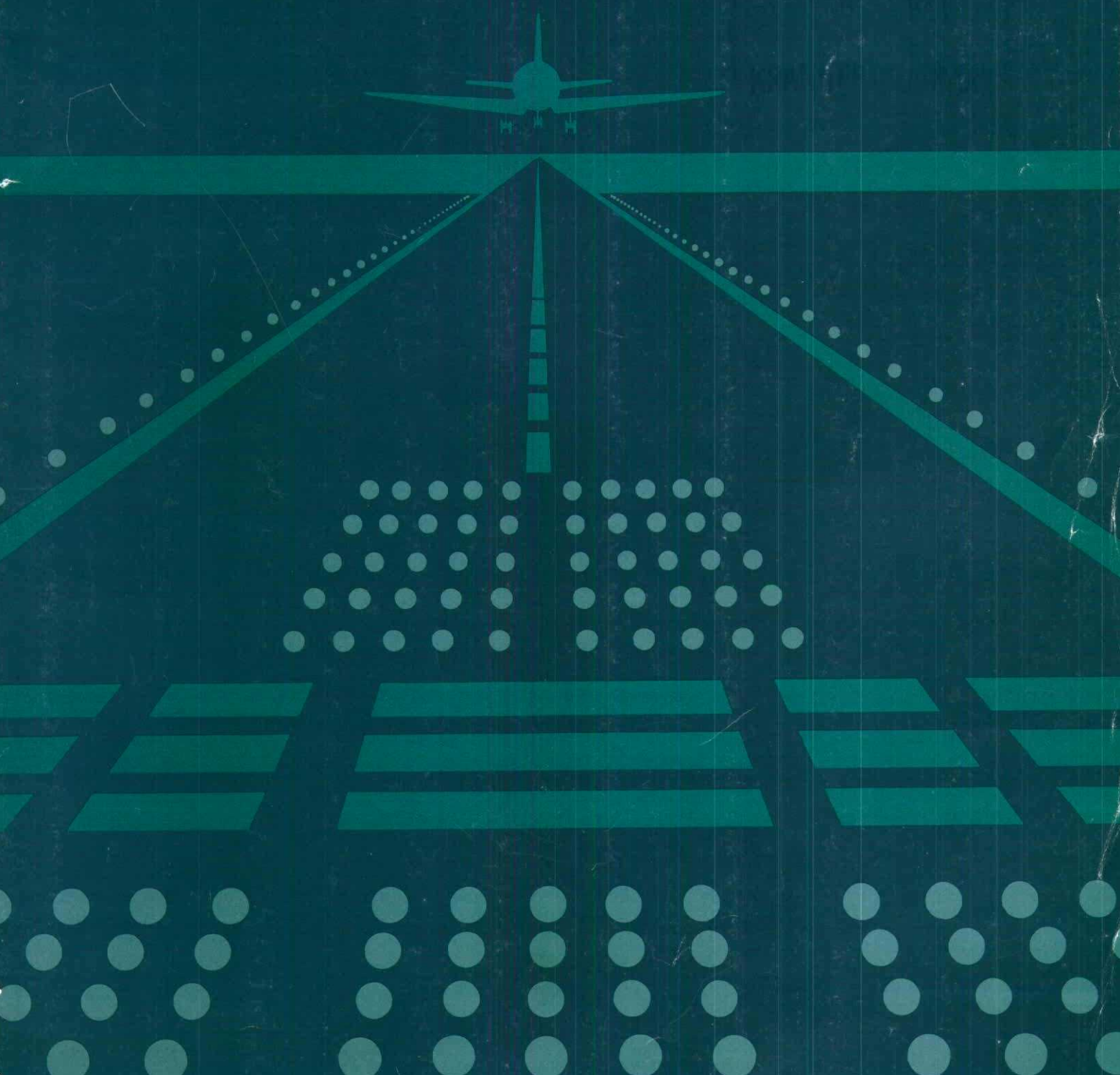
Teledyne Report

For the Year 1990

RVR Systems: Measuring Airport Visibility



MEASURING AIRPORT

VISIBILITY

Knowing the precise visibility on each airport runway when planes are landing and taking off is vital to safe and efficient commercial air travel. Teledyne Controls has developed and is producing a new Runway Visual Range system for the Federal Aviation Administration, greatly improving accuracy and reliability.

In 1989, the last year for which statistics are available, United States' air carriers provided travelers with more than 447 billion passenger miles of fast and convenient service in what may well be the most efficient and reliable system of transportation ever devised.

There are 401 U.S. airports equipped with Federal Aviation Administration (FAA) air traffic control towers. The FAA closely regulates the visibility rules under which commercial airliners may take off and land. Takeoff decisions are made by the air traffic controller, while the pilot must make the final decision on landing. In each case, the decisions are made on the basis of the actual visibility on the airport runway to be used. Other considerations include the type of instrument landing system with which the airport is equipped, and the type of landing instrumentation on the airplane.

The FAA has classified reduced visibility instrument landing procedures into three categories. Each category specifies two parameters. One of these is Decision Height, or the altitude at which a pilot must see the runway environment. The other is Runway Visual Range, a measure of horizontal visibility determined by electronic devices installed along each runway. Runway Visual Range, or RVR as it is known, is the distance over which the pilot of an aircraft on the runway, aligned on the center line, will be able to see the runway surface markings or the lights that mark the runway. Visibility conditions below specified Decision Height and RVR limits require execution of missed approaches or delayed takeoffs.

Category I applies when RVR has been reduced to 1,800 feet and specifies a Decision Height of 200 feet. Category II applies when RVR has been further reduced to 1,200 feet and specifies a Decision Height of 100 feet.

The third category has three subcategories. Category IIIA applies when RVR has lowered to 700 feet and a Decision Height of 50 feet is indicated. Category IIIB is in effect when RVR goes down to 150 feet and specifies a Decision Height of zero. The final category, IIIC is in effect at zero visibility with a Decision Height of zero.

The airport and airplane instrument landing systems determine the category capability of the airplanes. Few commercial airliners are equipped or certified to make landings under Category IIIC conditions. This is primarily due to the high cost of the sophisticated equipment


FOG
SNOW

Teledyne Controls' new Runway Visual Range system gives air traffic controllers a more accurate picture of just how far the pilot will be able to see at runway level on landing or takeoff.

needed, for conditions that are seldom encountered. Flights are often diverted to other airports when Decision Height or RVR conditions at the destination airport preclude landing.

Runway visibility conditions also apply to takeoffs. FAA regulations specify that the RVR on the runway being used must be 600 feet or more to permit aircraft departure.

Just How Far Can The Pilot See?

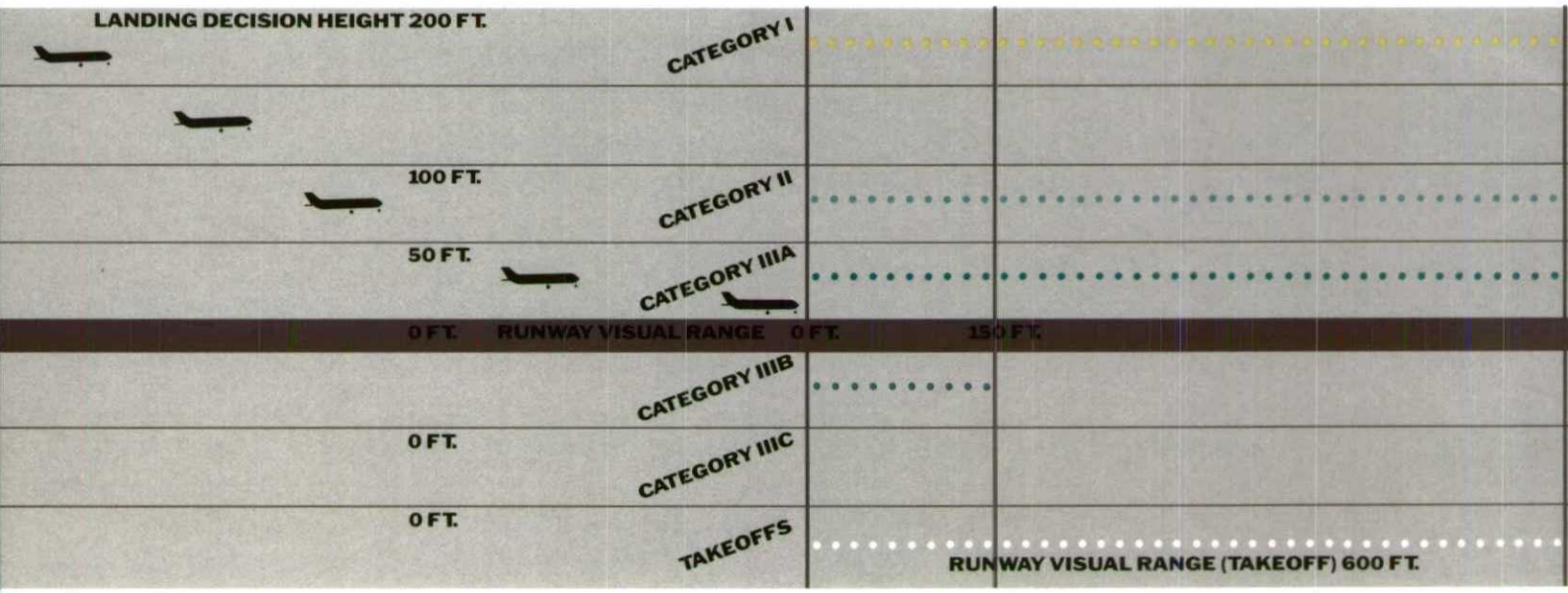
It is not easy to determine pilot visibility, since human vision involves both physical and psychological factors. The problem of what determines visibility in a given situation was studied long before the era of air travel. In 1876, a scientist named Allard investigated the physical laws which govern how the illuminance from a point source of light decreases with distance, and what effect this has on visibility of an illuminated source at night. In 1924, another scientist, Koschmieder, studied the relationship of contrast and distance in determining the visibility of objects in daylight. These phenomena are described by mathematical equations known today as Allard's law and Koschmieder's law. The mathematical algorithms used in the most advanced RVR systems being developed today are based on the work of these men.

Turning Theory Into Hardware

Some runways at large airports are several miles long. Since atmospheric conditions may vary considerably over much shorter distances, multiple sensors along each runway are required. The information these sensors provide must be sampled and updated constantly, since fog and other weather conditions that obscure visibility can change rapidly. It is vital that these measurements be as accurate as possible to assure compliance with FAA safety regulations.

Existing Runway Visual Range Systems

Most existing RVR systems are based on technology that has been in use for more than 20 years. The instruments used, called transmissometers, measure how much light can be transmitted through a given distance of the atmosphere between a calibrated light source and a remote light sensing device. These systems are mounted on two widely spaced towers about 14 feet above runway level, approximating the cockpit height of a commercial airliner. In the double-ended transmissometer type commonly used, one tower houses a visible light source which projects a narrow beam of controlled intensity light. The second tower contains a light sensing device. As visibility is reduced by fog, rain, snow or other obscurants, the intensity of the light received is reduced and this signal is the basis for computing the visibility range at that point.



FAA regulations classify visibility conditions into several categories. Each specifies a minimum horizontal visibility at the runway level, and a minimum altitude, called Decision Height, at which the pilot must be able to see the runway environment. (See text for more complete explanation.)

As a laboratory instrument, a transmissometer is highly accurate. Under outdoor field conditions at an airport, however, calibrating and maintaining the accuracy of these instruments requires a complex, continuous, and costly maintenance procedure.

New Forward Scatter Infrared Technology

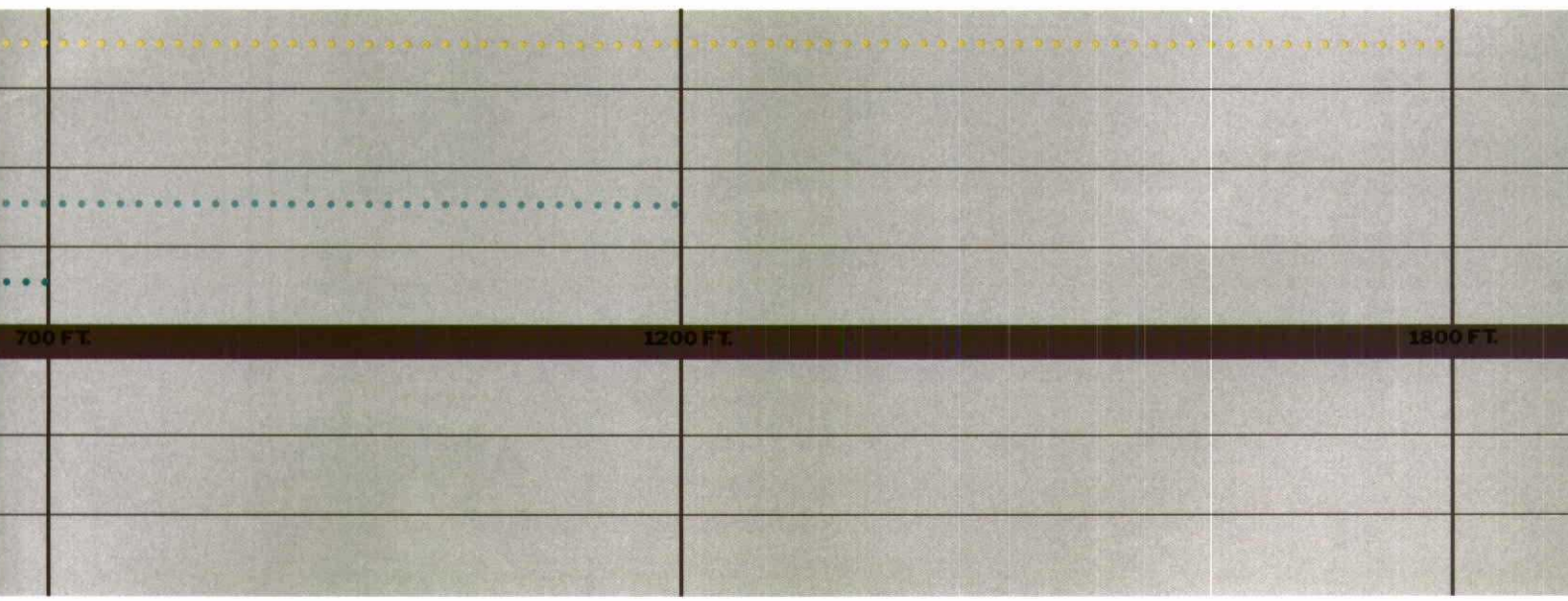
In June 1988, Teledyne Controls was awarded a contract by the FAA to carry out full scale engineering development and production of a new RVR system based on new technology. The new system uses an infrared forward scatter sensing principle that eliminates many of the maintenance and accuracy drawbacks of the earlier method.

The new system uses a small infrared transmitter and a photodetector receiver mounted within four feet of each other on the same metal yoke, thus eliminating any possibility of misalignment. A pulsed infrared beam is aimed at approximately a 45 degree angle with respect to the axis of the receiver so that no infrared energy enters the sensor directly.

In clear air, this beam passes by the receiver and no infrared energy is detected. If water vapor, or fog or rain—or any other obscurant such as smoke or dust—is in the air, a portion of the infrared energy is scattered away from the axis of the beam so that some of the infrared energy enters the receivers. The effect is similar to the halo one sees around a light source in foggy conditions.

The amount of energy that is scattered in a forward direction (hence the term forward scatter infrared detection) is proportional to the amount by which visibility is reduced. The stronger the signal received, the poorer the visibility.

Each runway is provided with one to three sensor units, depending on the length of the runway. They are located about 200 feet off the runway. They are capable of measuring visibility over a range of 50 feet to 6,500 feet under various weather conditions, and are designed to operate under severe conditions ranging from hot, humid climates to extreme cold, freezing rain and snow.



Extracting Visibility Information

While the sensors are critical elements, they are but one component in a complex network of sensors, data processors and display systems that provide the air traffic controller with accurate, real time runway visibility information.

Another sensor in the system is an ambient light sensor that measures the luminance of the northern sky. It is used in the visibility algorithm calculations and also switches the system between daylight and nighttime processing modes. A runway light intensity monitor also determines

the brightness level of each runway's center line and edge lights. The air traffic controller adjusts the brightness of runway lights based on data received from the RVR sensor and ambient light sensor. For example, on a bright clear day, no lights are needed, while a foggy night requires brighter light levels.

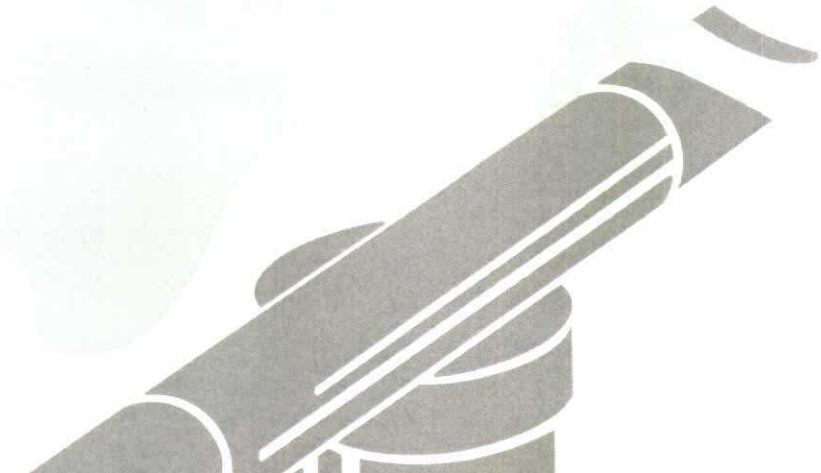
Raw sensor signals are fed to a microprocessor-based electronic subsystem mounted near each sensor. This subsystem converts the signals to a form that can be transmitted to a central Data Processing Unit located in the air traffic control tower. The subsystem also provides battery backup for continued operation in case of temporary power failure, and self-test electronics to warn the controllers of actual or impending system failure.

Converting Data To Helpful Information

The central data processing computer uses mathematical algorithms, based on Allard's and Koschmieder's laws, to convert the raw data to actual runway visibility values in feet or meters every two seconds. This information is then transmitted to RVR display units located at each air traffic controller's station.

The display units, which utilize liquid crystal display technology, each provide

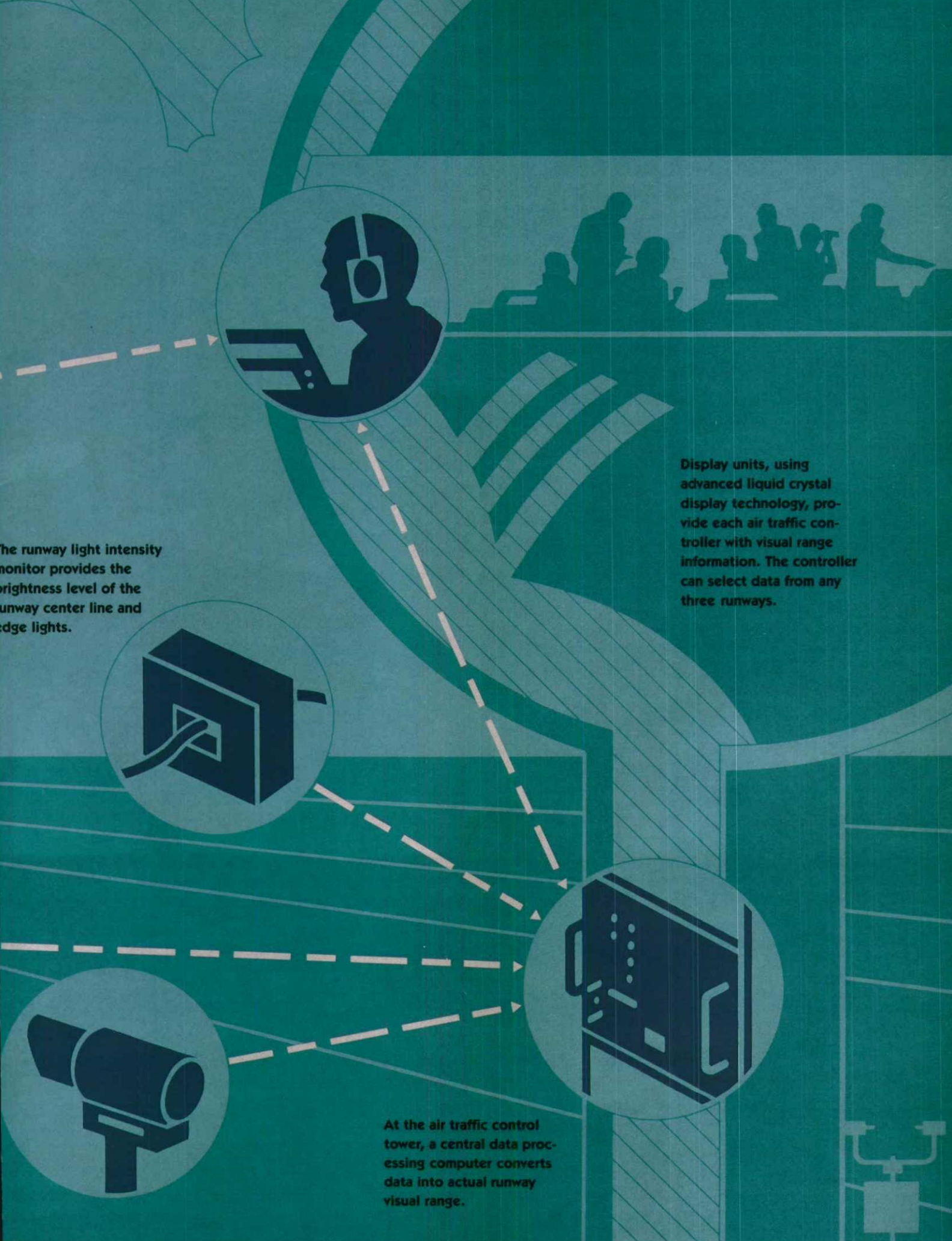
The new Runway Visual Range system developed by Teledyne Controls for the Federal Aviation Administration uses forward scatter infrared technology to measure visual range at the runway level. An infrared beam is projected at an angle to the axis of an infrared sensor mounted a few feet away. In clear air, no infrared energy is detected by the sensor. When visibility-reducing particulate matter such as fog is present, some of the infrared energy is scattered in a forward direction and is detected by the sensor. The signal from the sensor is then electronically processed, using various mathematical algorithms, to provide the air traffic controller with an accurate runway visual range reading.



Airplanes receive RVR data from the control tower.

One to three forward scatter infrared sensor units are located about 200 feet off the runway. A microprocessor based electronic system converts the signals from the sensors to a form that can be transmitted to the air traffic control tower.

A separate ambient light sensor, angled toward the northern sky, provides the Runway Visual Range system with a measurement of the ambient light level. This information is used in the visibility calculations and to switch the system between the daytime and night modes.



Display units, using advanced liquid crystal display technology, provide each air traffic controller with visual range information. The controller can select data from any three runways.

The runway light intensity monitor provides the brightness level of the runway center line and edge lights.

At the air traffic control tower, a central data processing computer converts data into actual runway visual range.

information for up to three runways simultaneously, any one of which can be selected by the operator. Visibility and runway light intensity readings are displayed.

The system also provides audible and visual low visibility threshold alarms for each sensor input. These can be set by the controller to any desired level.

A System That Diagnoses Its Own Ills

As air traffic control equipment becomes more complex, a growing factor in the cost of operating the nation's air traffic control system is the manpower required for maintenance and repair. Maintenance deals with the problem of assuring that all systems are operating accurately within prescribed parameters and are properly calibrated. Repair involves locating the cause of failure and bringing the equipment back into service as quickly as possible.

To address this growing problem, the FAA is instituting a Remote Maintenance Monitoring (RMM) system. This will be comprised of a number of regional Maintenance Processing System computers that will receive information via direct data links from individual "smart" systems that are able to self-diagnose and report most actual or impending failures. These RMM centers will then determine what action is needed and inform a local technician on how to solve the problem. With newer systems this will often just be a matter of replacing a plug-in circuit board or subsystem.

The RVR system now being produced by Teledyne Controls is one of the very first air traffic control systems to incorporate this important self-diagnostic RMM technology. Providing this capability required the development of highly sophisticated diagnostic software and hardware, in addition to the system's operating software.

Infrared source and detector are mounted on a common support (left) to assure accurate and permanent alignment for measuring runway visibility. A single light sensor (right) monitors the natural ambient light conditions for the entire system.

Now In Operational Test At Chicago O'Hare

The development of this new advanced RVR system was carried out by Teledyne Controls under an FAA engineering development and production contract. Design qualification of the system was recently completed, and the program is now undergoing a six-month field reliability test on two runways at Chicago O'Hare airport. Runways at thirteen other major airports around the country are in the process of being equipped with the new Teledyne system as part of the field reliability test program.

Upon successful completion of this test, the RVR system will go through a formal

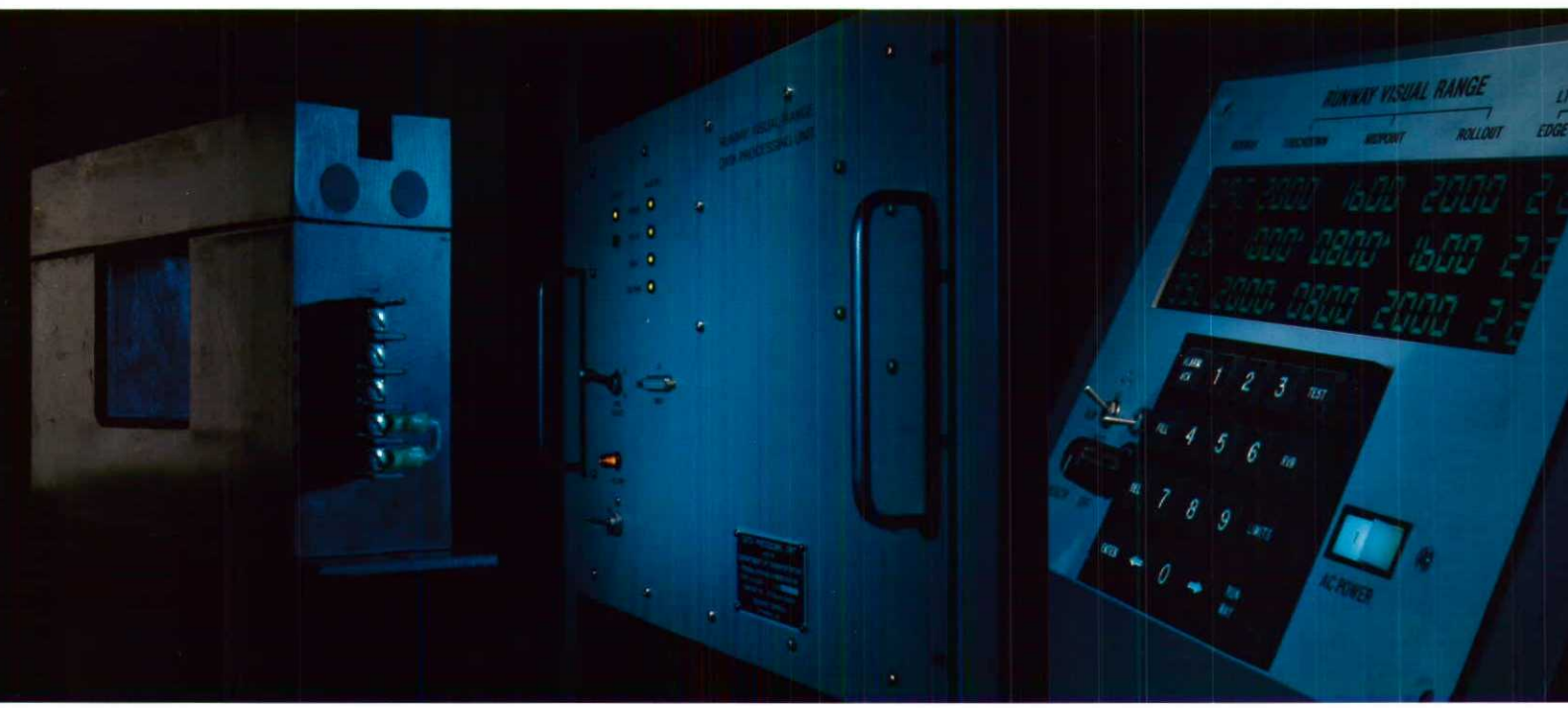
FAA commissioning process and will then become operational. Under the initial contract, Teledyne Controls will supply complete systems for 256 airports throughout the country. In addition to the remaining U.S. airports, there is a large international market for this type of system.

Teledyne Controls—Technology In International Air Travel

The new RVR system developed by Teledyne Controls is just one of many systems the company produces for international commercial air travel operations.

Teledyne Controls is also a developer and producer of onboard automatic digital air/ground communications systems used by airlines to exchange flight operations data and messages between in-flight aircraft and their ground terminals. They reduce pilot work load and distraction and thus contribute to flight safety by relieving pilots of many routine operational communications activities.

The company is also a major supplier of Aircraft Condition Monitoring Systems, used by airlines throughout the world to monitor the in-flight operating condition of their aircraft with onboard data recording systems for operational and maintenance purposes.



The brightness of the airport runway lights is provided to the system by a runway light intensity monitor (left). A central computer system (center) converts sensor data to actual visual range values. Liquid crystal displays (right) provide each air controller with simultaneous visual range readings on any three selected runways.

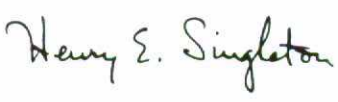
Income of continuing operations for 1990 was $69.2 million or $1.25 per share compared to $150.3 million or $2.71 per share for 1989. Sales were $3.45 billion in 1990 compared to $3.53 billion in 1989. Income of continuing operations for the fourth quarter of 1990 was $0.8 million or $0.01 per share compared to $38.8 million or $0.70 per share for the fourth quarter of 1989. Sales were $880.4 million for the fourth quarter of 1990 compared to $883.4 million in 1989.

Operating profit before tax for 1990 was adversely affected by approximately $90 million, of which $35 million was recorded in the fourth quarter, due to provisions for losses from the performance of development and initial production fixed-price contracts. These losses were significantly higher than those in the prior year. The economic slowdown in the steel and automotive industries, estimated losses on the disposal of certain operating companies, settlements for aircraft product liability and strikes at certain engine manufacturing locations also adversely affected the 1990 results.

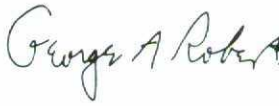
Teledyne's former insurance and finance subsidiaries are presented as discontinued operations in Note 9 to the consolidated financial statements. Net income for 1990 was $94.8 million or $1.71 per share, including $25.6 million of income of discontinued operations reported in the first quarter. Net income for 1989 was $258.9 million or $4.66 per share, including $108.6 million of income of discontinued operations. Net income for the fourth quarter of 1990 was $0.8 million or $0.01 per share and does not include any amount for discontinued operations. Net income for the same period of 1989 was $62.9 million or $1.14 per share, including $24.1 million for income of discontinued operations.

A cash dividend for the quarter ended December 31, 1990 of $0.20 per share was paid on November 20, 1990 to shareholders of record November 6, 1990.

Sales and operating profit by business segment are presented in Note 8 to the consolidated financial statements on pages 24 and 25. Management's Discussion and Analysis of Financial Condition and Results of Operations is presented on pages 30, 31 and 32.



Chairman of the Board
of Directors



Vice Chairman and
Chief Executive Officer

President

(In millions except per share amounts)

Year	*Sales*	*Net Income*	*Net Income Per Share*	*Shareholders' Equity*
1990	**$3,445.8**	**$ 94.8**	**$1.71**	**$ 523.5**
1989	**3,531.2**	**258.9**	**4.66**	**2,326.9**
1988	**3,534.6**	**391.8**	**6.81**	**2,138.4**
1987	**3,216.8**	**377.2**	**6.45**	**1,976.0**
1986	**3,241.4**	**238.3**	**4.07**	**1,636.6**
1985	**3,256.2**	**546.4**	**9.33**	**1,577.4**
1984	**3,494.3**	**574.3**	**7.54**	**1,159.3**
1983	**2,979.0**	**304.6**	**2.97**	**2,641.2**
1982	**2,863.8**	**269.6**	**2.61**	**2,111.1**
1981	**3,237.6**	**421.9**	**4.09**	**1,723.2**
1980	**2,926.4**	**352.4**	**3.12**	**1,410.2**
1979	**2,705.6**	**379.6**	**3.00**	**1,288.6**
1978	**2,441.6**	**254.4**	**1.93**	**890.3**
1977	**2,209.7**	**201.3**	**1.51**	**702.2**
1976	**1,937.6**	**137.6**	**0.96**	**516.1**
1975	**1,715.0**	**101.7**	**0.51**	**489.3**
1974	**1,700.0**	**31.5**	**0.11**	**477.8**
1973	**1,455.5**	**66.0**	**0.21**	**532.8**
1972	**1,216.0**	**59.3**	**0.14**	**484.0**
1971	**1,101.9**	**57.4**	**0.13**	**606.1**
1970	**1,216.4**	**61.9**	**0.14**	**576.3**
1969	**1,294.8**	**58.1**	**0.14**	**502.0**
1968	**806.7**	**40.3**	**0.11**	**316.5**
1967	**451.1**	**21.3**	**0.07**	**152.6**
1966	**256.8**	**12.0**	**0.06**	**90.2**
1965	**86.5**	**3.4**	**0.03**	**34.8**
1964	**38.2**	**1.4**	**0.02**	**13.7**
1963	**31.9**	**0.7**	**0.01**	**8.6**
1962	**10.4**	**0.2**	**—**	**3.5**
1961	**4.5**	**0.1**	**—**	**2.5**

As reported in the Company's annual reports, adjusted for stock dividends and splits and certain accounting changes. Net income, net income per share and shareholders' equity amounts include amounts for discontinued operations through March 31, 1990.

Consolidated Balance Sheets

December 31, 1990 and 1989
(In millions except share and per share amounts)

	1990	1989
ASSETS		
Current Assets:		
Cash and marketable securities	**$ 186.0**	$ 236.4
Receivables	**493.4**	455.5
Inventories	**293.2**	296.9
Deferred income taxes	**112.8**	67.0
Prepaid expenses	**17.7**	17.0
Total current assets	**1,103.1**	1,072.8
Property and Equipment	**355.5**	345.4
Prepaid Pension Cost	**137.6**	95.4
Other Assets	**69.9**	69.1
Net Assets of Discontinued Operations	**—**	1,880.8
	$1,666.1	$3,463.5
LIABILITIES AND SHAREHOLDERS' EQUITY		
Current Liabilities:		
Accounts payable	**$ 160.7**	$ 156.9
Accrued liabilities	**371.1**	316.2
Total current liabilities	**531.8**	473.1
Long-Term Debt	**510.6**	571.3
Deferred Income Taxes	**48.8**	50.8
Other Long-Term Liabilities	**51.4**	41.4
	1,142.6	1,136.6
Shareholders' Equity:		
Common stock, $1.00 par value, 100,000,000 shares authorized, 55,412,845 shares at December 31, 1990 and 11,082,569 shares at December 31, 1989 issued and outstanding	**55.4**	11.1
Additional paid-in capital	**34.5**	78.8
Retained earnings	**428.4**	2,167.2
Currency translation adjustment	**5.2**	2.8
Equity in net unrealized appreciation	**—**	67.0
Total shareholders' equity	**523.5**	2,326.9
	$1,666.1	$3,463.5

The accompanying notes are an integral part of these statements.

Consolidated Statements of Income

For the Years Ended December 31, 1990, 1989 and 1988
(In millions except per share amounts)

	1990	1989	1988
Sales	**$3,445.8**	$3,531.2	$3,534.6
Costs and Expenses:			
Cost of sales	**2,769.0**	2,750.2	2,709.9
Selling and administrative expenses	**529.9**	505.9	478.7
Interest expense	**68.4**	69.6	69.8
Other income	**(17.9)**	(26.2)	(38.5)
	3,349.4	3,299.5	3,219.9
Income of Continuing Operations before Income Taxes	**96.4**	231.7	314.7
Provision for Income Taxes	**27.2**	81.4	117.6
Income of Continuing Operations	**69.2**	150.3	197.1
Income of Discontinued Operations	**25.6**	108.6	194.7
Net Income	**$ 94.8**	$ 258.9	$ 391.8
Income Per Share:			
Continuing operations	**$ 1.25**	$ 2.71	$ 3.42
Discontinued operations	**0.46**	1.95	3.39
Net Income Per Share	**$ 1.71**	$ 4.66	$ 6.81

The accompanying notes are an integral part of these statements.

Consolidated Statements of Cash Flows

For the Years Ended December 31, 1990, 1989 and 1988
(In millions)

	1990	1989	1988
Operating activities:			
Net income	**$ 94.8**	$258.9	$391.8
Adjustments to reconcile net income to net cash provided by operating activities:			
Depreciation and amortization of property and equipment	**90.6**	97.8	98.2
Increase (decrease) in accounts payable and accrued liabilities	**69.3**	23.1	(1.7)
Decrease (increase) in deferred income taxes	**(47.8)**	(4.4)	7.6
Increase in prepaid pension cost	**(42.2)**	(31.9)	(36.2)
Decrease (increase) in receivables	**(37.9)**	9.7	(56.9)
Income of discontinued operations	**(25.6)**	(108.6)	(194.7)
Decrease (increase) in inventories	**3.7**	(13.3)	(23.2)
Increase (decrease) in accrued income taxes	**(2.9)**	(21.5)	8.2
Other, net	**19.0**	(30.9)	(35.1)
Net cash provided by operating activities	**121.0**	178.9	158.0
Investing activities:			
Purchases of property and equipment	**(113.1)**	(144.6)	(93.0)
Net decrease (increase) in short-term investments	**84.8**	(71.8)	65.1
Purchases of marketable securities	**(81.4)**	(6.7)	(56.2)
Proceeds from the sales of marketable securities	**45.7**	61.5	52.6
Other, net	**12.2**	16.0	25.8
Net cash used in investing activities	**(51.8)**	(145.6)	(5.7)
Financing activities:			
Reduction of long-term debt	**(46.8)**	(9.1)	(5.1)
Cash dividends	**(44.4)**	(44.5)	(46.1)
Acquisition and retirement of stock	**—**	(37.6)	(155.6)
Other, net	**(0.3)**	1.5	1.3
Net cash used in financing activities	**(91.5)**	(89.7)	(205.5)
Dividends from discontinued operations	**21.5**	57.1	54.2
Increase (decrease) in cash	**$ (0.8)**	$ 0.7	$ 1.0
Noncash transactions:			
Distribution of Unitrin	**$1,852.3**	$ —	$ —
Dividends from discontinued operations of Teledyne 10% debentures	**$ 29.0**	$ —	$ —
Income taxes paid	**$ 76.9**	$121.2	$126.0
Interest paid on long-term debt	**$ 60.0**	$ 63.3	$ 63.5

The accompanying notes are an integral part of these statements.

Consolidated Statements of Shareholders' Equity

For the Years Ended December 31, 1990, 1989 and 1988
(In millions except share and per share amounts)

	Common Stock	*Additional Paid-In Capital*	*Retained Earnings*	*Currency Translation Adjustment*	*Equity in Net Unrealized Appreciation*	*Shareholders' Equity*
Balance, December 31, 1987	$11.7	$82.9	$1,795.6	$2.8	$83.0	$1,976.0
Net income	—	—	391.8	—	—	391.8
Cash dividends ($4.00 per share)	—	—	(46.1)	—	—	(46.1)
Acquisition and retirement of stock (478,009 shares)	(0.5)	(3.3)	(151.8)	—	—	(155.6)
Change in net unrealized appreciation	—	—	—	—	(28.2)	(28.2)
Currency translation adjustment	—	—	—	0.5	—	0.5
Balance, December 31, 1988	11.2	79.6	1,989.5	3.3	54.8	2,138.4
Net income	—	—	258.9	—	—	258.9
Cash dividends ($4.00 per share)	—	—	(44.5)	—	—	(44.5)
Acquisition and retirement of stock (107,400 shares)	(0.1)	(0.8)	(36.7)	—	—	(37.6)
Change in net unrealized appreciation	—	—	—	—	12.2	12.2
Currency translation adjustment	—	—	—	(0.5)	—	(0.5)
Balance, December 31, 1989	11.1	78.8	2,167.2	2.8	67.0	2,326.9
Net income	—	—	94.8	—	—	94.8
Cash dividends ($0.80 per share)	—	—	(44.4)	—	—	(44.4)
Change in net unrealized appreciation	—	—	—	—	(3.9)	(3.9)
Currency translation adjustment	—	—	—	2.4	—	2.4
Distribution of Unitrin	—	—	(1,789.2)	—	(63.1)	(1,852.3)
Stock split (44,330,276 shares)	44.3	(44.3)	—	—	—	—
Balance, December 31, 1990	$55.4	$34.5	$ 428.4	$5.2	$ —	$ 523.5

The accompanying notes are an integral part of these statements.

To the Shareholders and Board of Directors of Teledyne, Inc.:

We have audited the accompanying consolidated balance sheets of Teledyne, Inc. (a Delaware corporation) and subsidiaries as of December 31, 1990 and 1989 and the related consolidated statements of income, shareholders' equity and cash flows for each of the three years in the period ended December 31, 1990. These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these financial statements based on our audits. We did not audit the 1989 and 1988 consolidated financial statements of United Insurance Company of America and subsidiaries and the investee companies (Note 9). The investment in the net assets of United Insurance Company of America and subsidiaries and the investee companies represent 46 percent in 1989 of consolidated assets and their net income represents 37 percent in 1989 and 33 percent in 1988 of consolidated net income. Those statements were audited by other auditors whose reports have been furnished to us and our opinion, insofar as it relates to amounts included in 1989 and 1988 for United Insurance Company of America and subsidiaries and the investee companies, is based on the reports of the other auditors.

We conducted our audits in accordance with generally accepted auditing standards. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

In our opinion, based on our audits and the reports of other auditors, the financial statements referred to above present fairly, in all material respects, the consolidated financial position of Teledyne, Inc. and subsidiaries as of December 31, 1990 and 1989, and the results of their operations and their cash flows for each of the three years in the period ended December 31, 1990 in conformity with generally accepted accounting principles.

Arthur Andersen & Co.

ARTHUR ANDERSEN & CO.

Los Angeles, California
January 6, 1991

Note 1. Summary of Significant Accounting Policies. *Principles of Consolidation.* The consolidated financial statements of Teledyne, Inc. include the accounts of all its subsidiaries, except its former insurance and finance subsidiaries. These former subsidiaries, which were spun off effective March 31, 1990, are presented as discontinued operations. All material intercompany accounts and transactions have been eliminated. Certain amounts for 1989 and 1988 have been reclassified to conform with the 1990 presentation.

Receivables. Receivables are presented net of a reserve for doubtful accounts of $10.0 million at December 31, 1990 and $9.4 million at December 31, 1989.

Inventories. Inventories are stated at the lower of cost (last-in, first-out and first-in, first-out methods) or market, less progress payments. Costs include direct material and labor costs and applicable manufacturing overhead. Sales and related costs are recorded as products are delivered and as services are performed, including those under long-term contracts. Costs relating to such long-term contracts are removed from inventory and charged to cost of sales at amounts approximating actual cost. Any foreseeable losses are charged to income when determined.

Cost in Excess of Net Assets of Purchased Businesses. Other assets include cost in excess of net assets of purchased businesses of $27.9 million at December 31, 1990 and 1989. Substantially all of this cost relates to businesses purchased prior to November 1970 and is not being amortized.

Depreciation and Amortization. Buildings and equipment are depreciated primarily on declining balance methods over their estimated useful lives. Leasehold improvements are amortized on a straight-line basis over the life of the lease. Maintenance and repair costs ($83.7 million in 1990, $87.6 million in 1989 and $79.9 million in 1988) are charged to income as incurred, and betterments and major renewals are capitalized. Cost and accumulated depreciation of property sold, retired or fully depreciated are removed from the accounts, and any resultant gain or loss is included in income.

Research and Development. Company-funded research and development costs ($62.6 million in 1990, $69.2 million in 1989 and $79.3 million in 1988) are expensed as incurred. Costs related to customer-funded research and development contracts are charged to costs and expenses as the related sales are recorded.

Income Taxes. Provision for income taxes includes federal, state and foreign income taxes. Deferred income taxes are provided for timing differences in the recognition of income and expenses.

Net Income Per Share. The weighted average number of shares of common stock used in the computation of net income per share was 55,412,845 in 1990, 55,504,340 in 1989 and 57,570,575 in 1988. Net income per share and average share amounts have been adjusted for the 5 for 1 common stock split distributed March 1, 1990.

Note 2. Inventories. Inventories at December 31, 1990 and 1989 were as follows (in millions):

	1990	*1989*
Raw materials and work-in-process	**$392.9**	$410.4
Finished goods	**66.9**	65.5
	459.8	475.9
Progress payments	**(166.6)**	(179.0)
	$293.2	$296.9

Inventories determined on the last-in, first-out method were $419.0 million at December 31, 1990 and $439.1 million at December 31, 1989. The remainder of the inventories was determined using the first-in, first-out method. Inventories stated on the last-in, first-out basis were $255.8 million and $264.8 million less than their first-in, first-out values at December 31, 1990 and 1989, respectively. These first-in, first-out values do not differ materially from current cost.

During 1990, 1989 and 1988 inventory usage resulted in liquidations of last-in, first-out inventory quantities. These inventories were carried at the lower costs prevailing in prior years as compared with the cost of current purchases. The effect of these last-in, first-out inventory liquidations was to increase net income by $6.0 million in 1990, $3.7 million in 1989 and $4.2 million in 1988.

Inventories, before progress payments, related to long-term contracts were $174.4 million and $189.7 million at December 31, 1990 and 1989, respectively. Progress payments related to long-term contracts were $150.5 million and $164.3 million at December 31, 1990 and 1989, respectively.

Note 3. Long-Term Debt. Long-term debt at December 31, 1990 and 1989 was as follows (in millions):

	1990	*1989*
10% Subordinated Debentures, due 2004, Series A and C, $29.8 payable annually commencing in 1994 (net of unamortized discount of $55.0 in 1990 and $62.5 in 1989)	**$473.1**	$530.0
Other	**38.5**	49.9
	511.6	579.9
Current portion	**(1.0)**	(8.6)
	$510.6	$571.3

Long-term debt payable, net of treasury debt, is $1.0 million in 1991, $4.3 million in 1992, $2.5 million in 1993, $2.8 million in 1994 and $6.1 million in 1995.

The Company's pension and savings plans held Teledyne 10% Subordinated Debentures with a par value of $111.1 million and $88.6 million at December 31, 1990 and 1989, respectively.

The Company has domestic credit lines with various banks totaling $125.0 million at December 31, 1990; no amounts were borrowed under these lines during 1990 or 1989. Commitments under standby letters of credit outstanding were $106.8 million at December 31, 1990. Compensating balance arrangements of an informal nature exist. Such arrangements had no material effect on the Company's consolidated financial statements at December 31, 1990.

Note 4. Supplemental Balance Sheet Information. Cash and marketable securities at December 31, 1990 and 1989 were as follows (in millions):

	1990	*1989*
Cash	**$ 7.9**	$ 8.7
United States Treasury notes, at amortized cost, which approximates market	**110.8**	114.6
Other marketable securities	**67.3**	113.1
	$186.0	$236.4

Property and equipment at December 31, 1990 and 1989 were as follows (in millions):

	1990	*1989*
Land	**$ 30.0**	$ 29.3
Buildings	**226.8**	220.4
Equipment and leasehold improvements	**620.6**	653.1
	877.4	902.8
Accumulated depreciation and amortization	**(521.9)**	(557.4)
	$355.5	$345.4

Accrued liabilities at December 31, 1990 and 1989 were as follows (in millions):

	1990	*1989*
Salaries and wages	**$ 82.8**	$ 85.8
Advances and billings in excess of costs	**74.9**	56.4
Interest, taxes and other	**213.4**	174.0
	$371.1	$316.2

Accounts payable includes $22.0 million at December 31, 1990 and $28.1 million at December 31, 1989 for checks outstanding in excess of cash balances.

Note 5. Shareholders' Equity. The Company is authorized to issue 15,000,000 shares of preferred stock, $1 par value. No preferred shares were issued or outstanding. In 1990, the number of common shares of stock the Company is authorized to issue was increased from 60,000,000 to 100,000,000 shares. In October 1988, the Board of Directors authorized the purchase of up to one million shares of the Company's common stock, of which 286,400 shares have been purchased as of December 31, 1990.

Under various borrowing agreements, the Company has agreed to maintain a minimum amount of net worth and has agreed to certain restrictions with respect to borrowing, sale of assets, purchase of capital stock and payment of dividends. At December 31, 1990, the Company was in compliance with these agreements and retained earnings of $196.9 million were not restricted by these agreements as to payment of dividends.

Note 6. Income Taxes. Provision for income taxes for the years ended December 31, 1990, 1989 and 1988 was as follows (in millions):

	1990	*1989*	*1988*
Current—Federal	**$58.3**	$ 68.9	$ 80.4
—State	**12.9**	19.2	23.3
—Foreign	**3.8**	5.7	5.9
	75.0	93.8	109.6
Deferred—Federal	**(28.1)**	(8.7)	7.9
—State	**(19.7)**	(3.7)	0.1
	(47.8)	(12.4)	8.0
	$27.2	$ 81.4	$117.6

Income of continuing operations before income taxes includes income from domestic operations of $86.4 million in 1990, $219.9 million in 1989 and $302.0 million in 1988.

Provision (credit) for deferred income taxes for the years ended December 31, 1990, 1989 and 1988 was as follows (in millions):

	1990	*1989*	*1988*
Loss contracts	**$(17.4)**	$ (0.5)	$ 0.2
Net pension income	**10.9**	10.9	13.1
Long-term contracts	**(10.4)**	(13.9)	14.1
Disposal of operating companies	**(9.5)**	0.1	(0.5)
Interest on income tax assessments	**8.5**	2.3	—
Intercompany securities transactions	**(8.3)**	—	—
Undistributed earnings	**(7.7)**	—	—
Vacation benefits	**(5.1)**	(0.7)	(3.7)
Warranties	**(3.1)**	(0.1)	(0.5)
Inventory valuation	**(1.8)**	(9.4)	(2.4)
Other	**(3.9)**	(1.1)	(12.3)
	$(47.8)	$(12.4)	$ 8.0

Undistributed earnings represents a reversal of $7.7 million provision for income taxes which is no longer necessary as a result of the spin-off of Teledyne's insurance and finance subsidiaries at March 31, 1990.

The effective income tax rate on pre-tax income for the years ended December 31, 1990, 1989 and 1988 was as follows:

	1990	*1989*	*1988*
Statutory federal income tax rate	**34.0%**	34.0%	34.0%
State and local income taxes, net of federal income tax effect	**4.5**	4.4	4.9
Undistributed earnings	**(8.0)**	—	—
Foreign sales corporation exemption	**(2.7)**	(1.3)	(0.9)
Research and development credit	**—**	(2.5)	—
Other, net	**0.4**	0.5	(0.6)
	28.2%	35.1%	37.4%

In 1987, Statement of Financial Accounting Standards (SFAS) No. 96 was issued which requires a change in accounting for income taxes effective in 1992. SFAS No. 96 permits the adjustment resulting from the change to be recorded entirely in the year of adoption or to be recorded by restating prior periods. The Financial Accounting Standards Board is considering amending certain aspects of the standard including the effective date. As a result, the Company has not yet determined the date, method or effect on operating results of SFAS No. 96. However, the adoption of SFAS No. 96 is not expected to have a material adverse effect on the financial condition of the Company.

Note 7. Pension Plans and Post-Retirement Benefits. The Company sponsors defined benefit pension plans covering substantially all of its employees. Benefits are generally based on years of service and/or final average pay. The Company funds the pension plans in accordance with the requirements of the Employee Retirement Income Security Act of 1974, as amended.

Components of pension expense (income) for the years ended December 31, 1990, 1989 and 1988 include the following (in millions):

	Expense (Income)		
	1990	*1989*	*1988*
Service cost—benefits earned during the year	**$ 40.2**	$ 35.0	$ 30.2
Interest cost on projected benefit obligation	**61.8**	58.3	53.4
Actual return on assets	**(136.1)**	(159.3)	(95.1)
Net amortization and deferral	**11.0**	41.7	(20.4)
Pension expense (income) for defined benefit plans	**(23.1)**	(24.3)	(31.9)
Other	**(0.1)**	1.4	1.4
Pension expense (income)	**$ (23.2)**	$ (22.9)	$(30.5)

Actuarial assumptions used to develop the components of pension expense (income) for the years ended December 31, 1990, 1989 and 1988 were as follows:

	1990	*1989*	*1988*
Discount rate	**7.25%**	7.75%	8.25%
Rate of increase in future compensation levels	**4.50%**	4.50%	4.50%
Expected long-term rate of return on assets	**6.00%**	6.00%	6.00%

Plan assets in excess of projected benefit obligations at December 31, 1990 and 1989 were as follows (in millions):

	1990	*1989*
Plan assets at fair value	**$1,567.9**	$1,487.2
Actuarial present value of benefit obligations:		
Vested benefit obligation	**739.7**	735.8
Non-vested benefit obligation	**15.0**	16.9
Accumulated benefit obligation	**754.7**	752.7
Additional benefits related to future compensation levels	**130.6**	130.0
Projected benefit obligation	**885.3**	882.7
Plan assets in excess of projected benefit obligation	**$ 682.6**	$ 604.5
Plan assets in excess of projected benefit obligation:		
Included in balance sheet:		
Prepaid pension cost	**$ 137.6**	$ 95.4
Accrued pension liability	**(21.2)**	(5.0)
Not included in balance sheet:		
Unrecognized net asset at adoption of SFAS No. 87, net of amortization	**390.4**	429.4
Unrecognized net gain due to experience different from that assumed and changes in the discount rate	**198.7**	109.9
Unrecognized prior service cost	**(22.9)**	(25.2)
Plan assets in excess of projected benefit obligation	**$ 682.6**	$ 604.5

At December 31, 1990 and 1989, the plans' assets, consisting primarily of fixed maturities, include debt obligations of the Company (primarily Teledyne 10% Subordinated Debentures) with a market value of $98.3 million and $83.6 million, respectively.

A discount rate of 7.50 percent at December 31, 1990, 7.25 percent at December 31, 1989 and 7.75 percent at December 31, 1988 and a rate of increase in future compensation levels of 4.50 percent at December 31, 1990, 1989 and 1988 were used for the valuation of pension obligations.

The Company provides post-retirement health care and life insurance benefits to certain of its employees. The costs for these benefits, which are charged to costs and expenses as incurred, were $16.4 million, $17.3 million and $17.5 million in 1990, 1989 and 1988, respectively.

In 1990, the FASB approved a statement which requires a change in accounting for post-retirement benefits other than pension. This statement must be adopted no later than 1993. The Company has post-retirement benefit plans at certain locations. Since these plans are unfunded, the adoption of this statement will require that the estimated cost of these plans be recorded on an accrual basis. The Company has not yet determined the effect, which is expected to be material, of the adoption of the statement on the financial statements or the date or method of adoption.

Note 8. Business Segments. Teledyne is a diversified corporation comprised of companies which manufacture a wide variety of products. The Company's major business segments include aviation and electronics, specialty metals, industrial and consumer.

Companies in the aviation and electronics segment produce aircraft engines, airframe structures, unmanned air vehicles, target drone systems, equipment and subsystems for spacecraft and avionics. Other activities in this segment include the manufacture of semiconductors, relays, aircraft-monitoring and control systems, military electronic equipment and other related products and systems. Products in the specialty metals segment include zirconium, titanium, high temperature nickel based alloys, high-speed and tool steels, tungsten and molybdenum. Other operations in this segment consist of processing, casting, rolling and forging metals. The industrial segment is comprised of companies that manufacture turbine engines, a large range of air and water cooled, gasoline and diesel fueled engines, machine tools, dies and consumable tooling. The consumer segment manufactures oral hygiene products, shower massages, water and air purification systems, swimming pool and spa heaters and provides other products and services.

Information on the Company's business segments for the years ended December 31, 1990, 1989 and 1988 was as follows (in millions):

	1990	*1989*	*1988*
Sales:			
Aviation and electronics	**$1,471.4**	$1,465.7	$1,548.1
Specialty metals	**853.7**	922.7	857.5
Industrial	**796.1**	809.4	805.5
Consumer	**324.6**	333.4	323.5
	$3,445.8	$3,531.2	$3,534.6

The Company's backlog of confirmed orders was approximately $2.2 billion at December 31, 1990 and $2.0 billion at December 31, 1989. Backlog of the aviation and electronics segment was $1.6 billion at December 31, 1990 and $1.4 billion at December 31, 1989.

The Company's sales to the U.S. government were $1.2 billion in 1990 and 1989 and $1.3 billion in 1988, including direct sales as prime contractor and indirect sales as subcontractor. Most of these sales were in the aviation and electronics segment. Sales by operations in the United States to customers in other countries were $384.0 million in 1990, $372.8 million in 1989 and $377.8 million in 1988. Sales between business segments, which were not material, generally were priced at prevailing market prices. In 1990, the Company announced its intention to cease operations at its Teledyne Monarch Rubber operation, which accounted for approximately $120 million in 1990 and $135 million in 1989 and 1988 of industrial segment sales.

	1990	*1989*	*1988*
Income of Continuing Operations before Income Taxes:			
Aviation and electronics	**$ 44.5**	$ 92.1	$146.4
Specialty metals	**92.0**	123.1	118.6
Industrial	**48.4**	78.0	89.0
Consumer	**38.7**	35.0	38.0
Operating profit	**223.6**	328.2	392.0
Corporate expenses	**76.7**	53.1	46.0
Interest expense	**68.4**	69.6	69.8
Other income	**(17.9)**	(26.2)	(38.5)
	$ 96.4	$231.7	$314.7

Operating profit for 1990 in the aviation and electronics segment was adversely affected by approximately $90 million due to provisions for losses from the performance of development and initial production fixed-price contracts. These losses were significantly higher than those in prior years. The economic slowdown in the steel and automotive industries contributed to the decline in operating profit in 1990 in the specialty metals segment. Operating profit in 1990 for the industrial segment and the

specialty metals segment was adversely affected by estimated losses on disposal of certain operating companies. In addition strikes at certain engine manufacturing locations in both the industrial segment and the aviation and electronics segment adversely affected 1990 results. Corporate expenses increased in 1990 due to settlements for aircraft product liability. The Company experienced a decline in profit in 1989 in the aviation and electronics segment as a result of higher than anticipated costs on certain defense contracts and decreased demand in the defense sector.

	1990	*1989*	*1988*
Depreciation and Amortization:			
Aviation and electronics	**$ 29.5**	$ 37.5	$ 38.8
Specialty metals	**27.1**	24.1	23.2
Industrial	**19.5**	20.0	20.7
Consumer	**6.8**	7.3	6.4
Corporate	**7.7**	8.9	9.1
	$ 90.6	$ 97.8	$ 98.2
Identifiable Assets:			
Aviation and electronics	**$ 404.2**	$ 405.5	$ 408.5
Specialty metals	**323.7**	312.7	288.7
Industrial	**294.3**	272.2	270.2
Consumer	**103.5**	91.9	86.8
Corporate	**540.4**	500.4	396.9
	1,666.1	1,582.7	1,451.1
Net assets of discontinued operations	**—**	1,880.8	1,817.1
	$1,666.1	$3,463.5	$3,268.2
Capital Expenditures:			
Aviation and electronics	**$ 19.7**	$ 28.3	$ 31.9
Specialty metals	**49.4**	52.3	25.4
Industrial	**26.7**	34.0	17.9
Consumer	**10.9**	21.2	8.3
Corporate	**6.4**	8.8	9.5
	$ 113.1	$ 144.6	$ 93.0

Note 9. Discontinued Operations. Teledyne distributed to its shareholders, in a tax-free transaction, all of the outstanding common stock of Unitrin, Inc. (Unitrin), the parent company of Teledyne's former insurance and finance subsidiaries. The units involved were United Insurance Company of America and subsidiaries, Trinity Universal Insurance Company and subsidiaries and Fireside Securities Corporation and subsidiaries. The Teledyne consolidated financial statements reflect the distribution as of March 31, 1990, the date Unitrin ceased to be a subsidiary of Teledyne.

The following condensed statements summarize the combined financial position and operating results of the former insurance and finance subsidiaries (in millions):

Condensed Balance Sheet
December 31, 1989

	1989
Assets:	
Investments	$3,059.3
Receivables	518.7
Other assets	539.0
	$4,117.0
Liabilities and Shareholder's Equity:	
Insurance reserves	$1,445.3
Other liabilities	790.6
Shareholder's equity	1,881.1
	$4,117.0

Combined Statements of Income
For the Years Ended December 31, 1990, 1989 and 1988

	1990	*1989*	*1988*
Premium and Other Revenues:			
Premiums	**$ 229.6**	$ 835.5	$ 808.2
Net investment income	**53.4**	210.2	200.1
Thrift and loan revenues	**15.6**	61.1	57.2
	298.6	1,106.8	1,065.5
Benefits and Expenses:			
Benefits and loss expenses	**148.3**	563.7	524.4
Underwriting, acquisition and insurance expenses	**108.0**	388.7	362.8
Thrift and loan and other expenses	**15.4**	66.5	58.4
	271.7	1,018.9	945.6
	26.9	87.9	119.9
Gains (Losses) on Sales of Investments	**(0.8)**	0.8	118.9
Income before Income Taxes and Equity in Net Income of Investees	**26.1**	88.7	238.8
Provision for Income Taxes	**8.8**	24.0	73.5
	17.3	64.7	165.3
Equity in Net Income of Investees	**8.3**	41.6	36.0
Net Income	**$ 25.6**	$ 106.3	$ 201.3

Income of discontinued operations for 1990 consists of results of operations through March 31, the effective date of the spin-off of the former insurance and finance subsidiaries.

Note 10. Commitments and Contingencies. Rental expense under operating leases was $31.6 million in 1990, $29.9 million in 1989 and $29.0 million in 1988. Future minimum rental commitments under operating leases with non-cancellable terms of more than one year as of December 31, 1990, are as follows: $20.3 million in 1991, $17.9 million in 1992, $14.6 million in 1993, $10.9 million in 1994, $9.2 million in 1995 and $31.7 million thereafter.

The Company is subject to ongoing examination of its federal tax returns by the Internal Revenue Service. For the years 1980 and 1981, the IRS initially proposed the imposition of an accumulated earnings tax of $122 million and $128 million, respectively. Subsequently, agreement was reached eliminating the proposed tax in its entirety. The IRS has not asserted an accumulated earnings tax for any subsequent year, but it is not precluded by the agreement reached from doing so.

The Company has been and is subject from time to time to various audits, reviews and investigations relating to the Company's compliance with federal and state laws. Should there be a determination by the U.S. government that any unit involved is not a "presently responsible contractor," that unit, and conceivably the Company, could be suspended for an indeterminate period of time from receiving new government contracts or government-approved subcontracts.

On August 15, 1990, federal agents executed a search warrant on and removed a number of documents relating to government-furnished materials from the Company's Teledyne Neosho unit. In addition, several Teledyne Neosho employees received subpoenas to testify before a federal grand jury. Based on an ongoing internal review, and after consultation with counsel, the Company does not possess sufficient information to determine whether the Company will sustain a loss as a result of the investigation, or to reasonably estimate the amount of any such loss. Consequently, the Company has not been able to identify the existence of a material loss contingency arising from this investigation.

On October 2, 1990, federal agents executed a search warrant on and removed a number of documents relating to production and supply of relays from the Company's Teledyne Relays unit. In addition, several Teledyne Relays employees received subpoenas to testify before a federal grand jury. Based on an ongoing internal review, and after consultation with counsel, the Company does not possess sufficient information to determine whether the Company will sustain a loss as a result of the investigation, or to reasonably estimate the amount of any such loss. Consequently, the Company has not been able to identify the existence of a material loss contingency arising from this investigation.

On November 28, 1990, the U.S. government announced that it will intervene in, and assume principal responsibility for prosecuting, an action originally filed by individual plaintiffs against subsidiaries of the Company under provisions of the False Claims Act which permit individuals to bring suit in the name of the government and share in any recovery received. The government has not yet served its amended complaint, but the Company believes that the action centers on cost estimating practices of its Teledyne Systems unit which the government has claimed resulted in damages estimated "in the millions of dollars." The False Claims Act permits assessment of treble damages, and provides for civil penalties of up to $10,000 for any false claim made. The allegations believed to form the basis of this suit are also the subject of a continuing federal grand jury investigation of Teledyne Systems. Based on an ongoing internal review, and after consultation with counsel, the Company does not possess sufficient information to determine whether the Company will sustain a loss in these matters, or to reasonably estimate the amount of any such loss. Consequently, the Company has not been able to identify the existence of a material loss contingency arising therefrom.

In October of 1988, federal and state agents executed a search warrant on the Company's Teledyne Ryan Aeronautical unit. The agents removed documents relating to the unit's compliance with its sewer discharge permit, and tested the sewer effluent. On August 24, 1990, federal prosecutors informed the Company that they are now considering criminal charges. The Company believes that its Teledyne Ryan Aeronautical unit has complied with the sewer discharge permit, and intends to vigorously defend itself in the event any charges are brought. The Company believes that the outcome of this matter will not have a material adverse effect on the Company's financial condition.

Selected Quarterly Financial Data

(In millions except per share amounts)

Quarterly financial data for 1990 and 1989 were as follows:

	Quarter Ended			
	March 31	*June 30*	*September 30*	*December 31*
1990–				
Sales	$836.9	$882.1	$846.4	$880.4
Gross profit	$174.2	$180.6	$150.9	$171.1
Income of continuing operations	$ 32.7	$ 26.6	$ 9.1	$ 0.8
Income of discontinued operations	25.6	—	—	—
Net income	$ 58.3	$ 26.6	$ 9.1	$ 0.8
Income per share:				
Continuing operations	$ 0.59	$ 0.48	$ 0.17	$ 0.01
Discontinued operations	0.46	—	—	—
Net income per share	$ 1.05	$ 0.48	$ 0.17	$ 0.01
1989–				
Sales	$864.3	$907.7	$875.8	$883.4
Gross profit	$195.3	$198.9	$204.7	$182.1
Income of continuing operations	$ 35.2	$ 32.8	$ 43.5	$ 38.8
Income of discontinued operations	35.3	14.0	35.2	24.1
Net income	$ 70.5	$ 46.8	$ 78.7	$ 62.9
Income per share:				
Continuing operations	$ 0.63	$ 0.59	$ 0.79	$ 0.70
Discontinued operations	0.63	0.26	0.63	0.44
Net income per share	$ 1.26	$ 0.85	$ 1.42	$ 1.14

The Company paid cash dividends of $0.20 per share for each quarter in 1990 and 1989. The Company's average shares outstanding were 55,778,835 for the first quarter of 1989 and 55,412,845 for each quarter from June 1989 through December 1990. Average shares, income per share and cash dividends per share have been adjusted for the 5 for 1 common stock split distributed March 1, 1990.

The Company experienced a decline in income in 1990 due to pre-tax provisions for losses of approximately $90 million, of which $35 million was recorded in the fourth quarter, from the performance of development and initial production fixed-price contracts. These losses were significantly higher than those in 1989. The economic slowdown in the steel and automotive industries and strikes at certain engine manufacturing locations contributed to the decline in income in 1990. Income in the fourth quarter of 1990 was adversely affected by estimated losses on disposal of certain operations. Income in the third quarter of 1990 was reduced due to settlements for aircraft product liability. The first quarter of 1990 includes a reversal of $7.7 million provision for income taxes which is no longer necessary as a result of the spin-off of Teledyne's insurance and finance subsidiaries at March 31, 1990.

Selected Financial Data

For the Five Years Ended December 31, 1990
(In millions except per share amounts)

	1990	1989	1988	1987	1986
Sales	$3,445.8	$3,531.2	$3,534.6	$3,216.8	$3,241.4
Income of continuing operations	$ 69.2	$ 150.3	$ 197.1	$ 162.6	$ 105.7
Income of discontinued operations	25.6	108.6	194.7	214.6	132.6
Net income	$ 94.8	$ 258.9	$ 391.8	$ 377.2	$ 238.3
Income per share:					
Continuing operations	$ 1.25	$ 2.71	$ 3.42	$ 2.78	$ 1.81
Discontinued operations	0.46	1.95	3.39	3.67	2.26
Net income per share	$ 1.71	$ 4.66	$ 6.81	$ 6.45	$ 4.07
Working capital	$ 571.3	$ 599.7	$ 554.3	$ 555.2	$ 408.9
Net assets of discontinued operations	$ —	$1,880.8	$1,817.1	$1,703.6	$1,529.0
Assets	$1,666.1	$3,463.5	$3,268.2	$3,091.7	$2,719.8
Long-term debt	$ 510.6	$ 571.3	$ 578.0	$ 576.9	$ 577.1
Shareholders' equity	$ 523.5	$2,326.9	$2,138.4	$1,976.0	$1,636.6

In 1990, Teledyne distributed to its shareholders all of the outstanding common stock of Unitrin, Inc., the parent company of Teledyne's former insurance and finance subsidiaries.

In 1987, the Company changed its method of accounting for pension expense, as required by SFAS No. 87. Income of continuing operations before income taxes includes a credit of $23.2 million in 1990, $22.9 million in 1989, $30.5 million in 1988 and $26.7 million in 1987 compared to pension expense of $47.8 million in 1986.

The Company has paid cash dividends of $0.80 per share each year since 1987. Income per share and cash dividends per share have been adjusted for the 5 for 1 common stock split distributed March 1, 1990.

Management's Discussion and Analysis of Financial Condition and Results of Operations

The Company's consolidated operations consist of a large number of divisions operating in a variety of industries. For reporting purposes Teledyne's operations are summarized in the segments presented in Note 8 to the consolidated financial statements. It is not practical to identify and explain fluctuations for any operating units or groups of units smaller than these segments.

Sales have remained relatively constant at approximately $3.5 billion since 1988 up from $3.2 billion in 1987 and 1986. Sales in the aviation and electronics segment have not changed significantly since 1986. Specialty metals segment sales, after increasing each year since 1986, declined in 1990 primarily due to the economic slowdown in the steel and automotive industries. Sales in the industrial segment have not varied substantially since 1988. After increasing steadily since 1986, consumer segment sales declined in 1990 due to the disposal of certain operations in 1989.

Operating profit decreased $104.6 million in 1990 and $63.8 million in 1989 after increasing $37.9 million in 1988.

Operating profit decreased in 1990 for all segments except consumer. Operating profit in the aviation and electronics segment was adversely affected by approximately $90 million due to provisions for losses from the performance of development and initial production fixed-price contracts. These losses were significantly higher than those in prior years. The decrease in operating profit in 1990 for the specialty metals segment was primarily the result of the decline in sales. Operating profit in 1990 for the specialty metals segment and the industrial segment was adversely affected by estimated losses on disposal of certain operations. In addition, strikes at certain engine manufacturing locations in both the industrial segment and in the aviation and electronics segment adversely affected 1990 results. Income before income tax for 1990 was reduced for settlements for aircraft product liability.

The 1989 decrease in operating profit was principally in the aviation and electronics segment as a result of higher than anticipated costs on certain defense contracts and decreased demand in the defense sector. The 1988 increase in operating profit was primarily in the specialty metals segment principally from increased demand in the transportation, capital equipment and aerospace industries. The increase in income of continuing operations in 1987 was the result of a change in the method of accounting for pension expense as required by the Financial Accounting Standards Board (FASB). Income of continuing operations includes a credit of $23.2 million in 1990, $22.9 million in 1989, $30.5 million in 1988 and $26.7 million in 1987 compared to pension expense of $47.8 million in 1986. The 1986 decrease in the industrial segment was primarily the result of depressed economic conditions in various oil service related products. The effect of inflation on net income from 1986 to 1990 was not material.

The Company's effective federal income tax rate decreased in 1990 primarily as a result of the reversal of $7.7 million provision for income taxes which is no longer necessary as a result of the spin-off of Teledyne's insurance and finance subsidiaries at March 31, 1990. The Company's effective federal income tax rate decreased in 1988 as a result of the Tax Reform Act of 1986 which lowered the federal income tax rate on ordinary income to 34 percent in 1988 from 40 percent in 1987 and 46 percent in 1986. In 1987, Statement of Financial Accounting Standards (SFAS) No. 96 was issued which requires a change in accounting for income taxes effective in 1992. SFAS No. 96 permits the adjustment resulting from the change to be recorded entirely in the year of adoption or to be recorded by restating prior periods. The FASB is considering amending certain aspects of this statement including the effective date. As a result, the Company has not yet determined the date, method or effect on operating results of SFAS No. 96. However, the adoption of SFAS No. 96 is not expected to have a material adverse effect on the financial condition of the Company.

In 1990, the FASB approved a statement which requires a change in accounting for post-retirement benefits other than pension. This statement must be adopted no later than 1993. The Company has post-retirement benefit plans at certain locations. Since these plans are unfunded, the adoption of this statement will require that the estimated cost of these plans be recorded on an accrual basis. The Company has not yet determined the effect, which is expected to be material, of the adoption of the statement on the financial statements or the date or method of adoption.

Income of discontinued operations represents the results of Teledyne's former insurance and finance subsidiaries, which were spun off in two tax-free transactions. The Teledyne consolidated financial

statements reflect the distribution of Unitrin, Inc. as of March 31, 1990 and Argonaut Group as of September 30, 1986.

Shareholders' equity decreased in 1990 primarily as a result of the Unitrin distribution of $1.9 billion. Increases before 1990 were primarily the result of net income reduced by the acquisition and retirement of stock of $37.6 million in 1989 and $155.6 million in 1988, and cash dividends of $44.5 million in 1989, $46.1 million in 1988 and $46.8 million in 1987.

Except for the potential effects of the matters discussed below, the Company has been able to meet all cash requirements during the past five years with cash generated from operations and is not aware of any impending cash requirements or capital commitments which could not be met by internally generated funds.

Certain of the Company's units have initiated major technological improvements by which they intend to improve productivity. If funds are needed beyond those internally generated, the Company could obtain funds for future capital requirements, depending on prevailing economic circumstances, through the sale of equity securities or other securities with an equity component, the utilization of existing credit lines with various banks or other borrowings.

The Company is subject to ongoing examination of its federal tax returns by the Internal Revenue Service. For the years 1980 and 1981, the IRS initially proposed the imposition of an accumulated earnings tax of $122 million and $128 million, respectively. Subsequently, agreement was reached eliminating the proposed tax in its entirety. The IRS has not asserted an accumulated earnings tax for any subsequent year, but it is not precluded by the agreement reached from doing so.

Company subsidiaries perform work on a substantial number of defense contracts with the U.S. government. Many of these contracts include price redetermination clauses, and most are terminable at the convenience of the government. Certain of these contracts are fixed-price or fixed-price incentive development contracts. There is substantial risk on such contracts that costs may exceed those expected when the contracts were negotiated. Absent modification of these contracts, any costs incurred in excess of the fixed or ceiling prices must be borne by the Company. In addition, virtually all defense programs are subject to curtailment or cancellation due to the annual nature of the government appropriations and allocations process.

The Company has been and is subject from time to time to various audits, reviews and investigations relating to the Company's compliance with federal and state laws. Should there be a determination by the U.S. government that any unit involved is not a "presently responsible contractor," that unit, and conceivably the Company, could be suspended for an indeterminate period of time from receiving new government contracts or government-approved subcontracts.

On August 15, 1990, federal agents executed a search warrant on and removed a number of documents relating to government-furnished materials from the Company's Teledyne Neosho unit. In addition, several Teledyne Neosho employees received subpoenas to testify before a federal grand jury. Based on ongoing internal review, and after consultation with counsel, the Company does not possess sufficient information to determine whether the Company will sustain a loss as a result of the investigation, or to reasonably estimate the amount of any such loss. Consequently, the Company has not been able to identify the existence of a material loss contingency arising from this investigation.

On October 2, 1990, federal agents executed a search warrant on and removed a number of documents relating to production and supply of relays from the Company's Teledyne Relays unit. In addition, several Teledyne Relays employees received subpoenas to testify before a federal grand jury. Based on an ongoing internal review, and after consultation with counsel, the Company does not possess sufficient information to determine whether the Company will sustain a loss as a result of the investigation, or to reasonably estimate the amount of any such loss. Consequently, the Company has not been able to identify the existence of a material loss contingency arising from this investigation.

On November 28, 1990, the U.S. government announced that it will intervene in, and assume principal responsibility for prosecuting, an action originally filed by individual plaintiffs against subsidiaries of the Company under provisions of the False Claims Act which permit individuals to bring suit in the name of the government and share in any recovery received. The government has not yet served its amended complaint, but the Company believes that the action centers on cost estimating practices of its Teledyne Systems unit which the government has claimed resulted in damages estimated "in the millions of

dollars." The False Claims Act permits assessment of treble damages, and provides for civil penalties of up to $10,000 for any false claim made. The allegations believed to form the basis of this suit are also the subject of a continuing federal grand jury investigation of Teledyne Systems. Based on an ongoing internal review, and after consultation with counsel, the Company does not possess sufficient information to determine whether the Company will sustain a loss in these matters, or to reasonably estimate the amount of any such loss. Consequently, the Company has not been able to identify the existence of a material loss contingency arising therefrom.

In October of 1988, federal and state agents executed a search warrant on the Company's Teledyne Ryan Aeronautical unit. The agents removed documents relating to the unit's compliance with its sewer discharge permit, and tested the sewer effluent. On August 24, 1990, federal prosecutors informed the Company that they are now considering criminal charges. The Company believes that its Teledyne Ryan Aeronautical unit has complied with the sewer discharge permit, and intends to vigorously defend itself in the event any charges are brought. The Company is presently engaged in negotiations to resolve this matter, and believes that the outcome will not have a material adverse effect on the Company's financial condition.

The Company is subject to federal, state and local laws and regulations concerning the environment, and is currently participating in administrative proceedings at numerous sites under these laws. Many of these proceedings are at a preliminary stage, and it is difficult to estimate with any certainty the total cost of remediation, the timing and extent of remedial actions required by governmental authorities, and the amount of the Company's liability, if any, in proportion to that of any other responsible parties. The Company is also seeking to establish insurance coverage with respect to certain of these matters. When it is possible to reasonably estimate the Company's liability with respect to these matters, provisions are made as appropriate. Based on facts presently known to it, the Company does not believe that the outcome of any of these administrative proceedings will have a material adverse effect on its financial condition.

Common Stock Price

	1990				*1989*			
Quarters	*1st*	*2nd*	*3rd*	*4th*	*1st*	*2nd*	*3rd*	*4th*
High	$72¾	$71⅞	$24¾	$17¼	$74⅝	$75½	$76⅛	$73⅞
Low	$66⅛	$23½	$15¾	$12	$66⅜	$69	$71½	$63½

Unitrin common stock, which was distributed to the Company's shareholders as of March 31, 1990, began trading separately from Teledyne common stock in the second quarter of 1990 (see Note 9 to the consolidated financial statements). Stock prices have been adjusted for the 5 for 1 common stock split distributed March 1, 1990.

Teledyne, Inc. common stock is listed on the New York and Pacific Stock Exchanges. As of December 31, 1990, there were approximately 16,000 record holders of common stock.

OUTLINE OF PRODUCTS AND ACTIVITIES

Aviation and Electronics: Products in the closely related fields of aviation and electronics range from the microscopic world of semiconductor devices to full-scale air frames and complete aircraft.

Teledyne's hybrid microcircuits are widely used in military, space, industrial and medical applications. These compact and complex electronic building blocks combine multiple transistors and integrated circuits in small packaging sizes, where reliability and light weight are of paramount importance. Thousands of these microcircuits, the size of postage stamps, have been produced, and are providing the precise control required for heart pacemakers and interplanetary missions, as well as many other uses.

On a still larger scale are Teledyne's high power traveling wave tubes, used to simultaneously transmit thousands of telephone conversations – or a dozen television channels–around the world via satellite networks.

Similar types of traveling wave tubes are used in the latest airborne and ground-based electronic counter measure equipment.

Other components include operational amplifiers, digital-analog converters, miniature relays, hybrid switching devices, radar augmenters, lower power microwave tubes, flexible printed-circuit interconnections, high reliability wire and cable, switches, terminals and a line of aircraft, military tank and truck batteries.

In the microwave industry, Teledyne is a leading supplier of ferrite components and switching devices, as well as filters, oscillators and integrated subsystems.

At the systems level, Teledyne produces equipment for telemetering data from remote sources, for electronic counter measures, and for information processing, as well as the aircraft integrated data systems used by dozens of major airlines to record in-flight performance and maintenance data on their jumbo jets.

Teledyne also performs systems engineering and integration for ballistic missile defense, space defense, shuttle payloads, computer software, and designs and produces military airborne training and evaluation systems.

Computing and inertial systems are also produced for the control and guidance of aircraft and space vehicles. Teledyne on-board computers have successfully controlled the launching of dozens of spacecraft, including both Viking missions to Mars.

Teledyne is heavily involved in electronic navigation systems. Raydist systems are used for precise radiolocation in coastal waters. Doppler radar systems produced by Teledyne were used on 24 successful space landings and guided each Apollo lander to the surface of the moon. Similar Doppler radars are used in military aircraft for anti-submarine warfare and search-and-rescue missions.

Teledyne avionic instruments and electronic systems contribute substantially to flight safety on both military and general aviation aircraft.

The use of the latest microcircuit technology and modern cryptographic algorithms permit Teledyne to supply very advanced identification equipment (IFF) used on military and commercial aircraft for peacetime air traffic control and for safe operation in a wartime environment.

Among Teledyne's many non-electronic products for aviation are controlled explosive devices that precisely time, sequence and actuate aircraft escape systems, and similar pyrotechnic devices used to separate the stages of space vehicles, and to eject or deploy instrument packages. Teledyne also produces parachute delivery systems for accurate air-drop of military cargo or emergency supplies.

Precise hydraulic and pneumatic actuating systems and components are made for fixed and rotary wing aircraft, as are ground support systems such as frequency and power converters and jet engine starters for commercial and general aviation use.

Continental piston engines have been powering airplanes for sixty years, and today about half of the general aviation piston engines produced in the United States are built by Teledyne and used worldwide. Teledyne turbine engines also power remotely piloted aircraft, military trainers and, in small, expendable versions, provide power for the Harpoon and other cruise missiles. Teledyne also services and overhauls turbines manufactured by others for both military and general aviation use.

The Company's expertise in airframe manufacture goes back to Charles Lindbergh's Spirit of St. Louis which was built by Ryan Airlines, Inc., forerunner of today's Teledyne Ryan Aeronautical. More than twenty-five types of remotely piloted aircraft–usually called RPVs–have been built by Teledyne, in both supersonic and subsonic versions. These recoverable and reusable vehicles are used for sophisticated military missions with the pilots safely flying them from remote control centers. Teledyne also builds the airframe for the Army's Apache attack helicopter and has produced thousands of feet of tapered, roll-formed stringers used in wide-body aircraft.

Through the production of sophisticated RPVs, Teledyne has also developed broad expertise in the use of advanced materials such as graphite composites, and has facilities for the numerically-controlled machining of airfoils from honeycomb materials.

Teledyne's participation in all these diverse areas of aviation, space and electronics has given the Company highly developed expertise in some of the most advanced technologies of our time.

Specialty Metals: The products of this business segment are representative of the practical application of metallurgical science and technology as it is known and practiced throughout the world. Their unique characteristics are derived from the nature of the metals produced, the particular properties of the alloys melted, and the various processes, methods, forms, shapes and end products manufactured.

In specialty metals, Teledyne is the most diversified producer of reactive and refractory metals in the United States. Teledyne produces all of the larger volume, commerically important metals and their alloys. Reactive metals production includes tita-

nium, zirconium and hafnium; refractory metals consist of tungsten, molybdenum, niobium, tantalum and vanadium.

Teledyne is the leading U.S. producer of zirconium, a highly corrosion-resistant metal that is transparent to neutrons. It is used for fuel tubes and structural parts in nuclear power reactors and for corrosion-resistant chemical industry applications. Hafnium, derived as a by-product of zirconium, is used for control rods in nuclear reactors due to its ability to absorb neutrons.

Teledyne is a producer of tungsten, starting from a large number of different tungsten bearing raw materials resulting in tungsten and tungsten carbide powders and mill products. Previously used cemented carbide parts are also recycled into tungsten carbide powder. Wrought or ductile tungsten products are used in diverse applications including light bulb filaments, inert gas welding electrodes, electrical contacts and aircraft counterweights.

Molybdenum, a sister metal to tungsten that also has a very high melting point, is produced by Teledyne in powder form and then shaped into solid forms through powder metallurgy techniques. It is an important alloying element for steels and is used for plasma arc spraying of piston rings, for electrodes in glass melting and for structural parts in high temperature furnaces.

Niobium, also known as columbium, is a high technology metal produced by Teledyne in various forms and alloys. It is used as an alloying element in the manufacture of many steels. The higher quality grades produced by Teledyne are used in superalloys for jet engines and special alloys for aerospace applications such as rocket nozzles. When alloyed with titanium, niobium is used in applications requiring superconducting characteristics for high-strength magnets. This rapidly developing field includes medical devices for body-scanning, accelerators for high-energy physics and fusion energy projects for future generation of electricity.

Tantalum, one of the most corrosion resistant metals, is produced by Teledyne for medical implants, chemical process equipment, and aerospace engine components.

Specialty metals include the special alloys that are central to the production of virtually every modern metal product available today.

Teledyne high-speed steels provide the high temperature hardness required for lathe bits, drills, milling cutters, taps and dies and other cutting tools. Related alloy steels, including a cobalt-free maraging grade, are produced for bearings, gears, special aerospace hardware and high-strength applications.

For the metalworking, mining and other industries requiring machine tools with extra hardness, Teledyne produces a line of sintered tungsten carbide products, made from tungsten carbide and various other metals under heat, to produce a material that approaches diamond in hardness. These cemented carbide products are used as super-hard cutters in the high-speed machining and cutting of steel and other applications where hardness and wear resistance are important. Technical developments related to ceramics, coatings and other disciplines are incorporated in these products.

Furthermore, Teledyne is an integrated producer of vacuum-melted nickel base, titanium base and iron base superalloys that are used worldwide to meet the high performance requirements of the aircraft, aerospace, gas turbine, nuclear energy and chemical process industries. These products, in various forms, are engineered to retain exceptional strength and corrosion resistance at temperatures through 2,000 degrees F and are used in critical, high-stress applications. Notably, this manufacturing facility installed one of the largest high precision rotary forging presses in the U.S. for more efficient working of these products.

Teledyne also processes metals by a variety of methods, including casting, forging, rolling, drawing and extruding, into finished forms used in a diverse number of industries.

For example, Teledyne is a specialist in the cold rolling of thin and ultra-thin metal strip in over 60 different metals and alloys for applications ranging from watch springs and flash bulbs to aerospace honeycomb materials and camera products.

Teledyne also casts a variety of metals into forms ranging from diesel locomotive engine blocks to lightweight aluminum and magnesium aircraft parts. Housings and parts are made for business machines, tools and automobiles. Cold-finished bar and shafting and cold-drawn stainless and custom fabricated tubing are also produced.

Other Teledyne companies are involved in roll-forming metals, forging heavy parts for construction and earth moving machinery and precision investment casting of difficult to produce parts.

Industrial Products: Engines of many sorts – air and liquid cooled, gasoline and diesel fueled – are products in this category. Teledyne piston engines range in power from lightweight, portable, air-cooled engines of a few horsepower up to heavy-duty turbo-charged diesel engines approaching 1,750 horsepower for use in military tanks and heavy construction equipment.

Another category of industrial products includes machine tools, dies and consumable tooling of all types. These range from numerically-controlled pipe and tube bending machines to a great variety of machines designed for the high speed production of precision machine threads by cutting, grinding and roll-forming methods, and a variety of similar equipment for the production of precision roll-formed gears. Presses, cut-off machines and can-making machines are also produced.

Other Teledyne production equipment includes transfer and assembly machines for the automated production of many kinds of products, as well as multi-gun automated resistance welding machines, single station manual resistance welding machines, welding power supplies, arc welding equipment and consumable supplies, such as welding electrodes and tubular and solid welding wire.

Unusual among Teledyne's welding products are the world's largest welding positioners and manipulators with capacities to 450 tons. These immense

Teledyne machines are used worldwide by the nuclear industry for welding and cladding nuclear reaction vessels with stainless steel.

Teledyne also produces complete automated bakery production lines and mixing and processing equipment for a variety of chemical, food and pharmaceutical products.

Related to the machine field are Teledyne's optical encoders and digital readouts which may be added to existing milling machines and other machine tools to modernize them, and to improve operator output and the accuracy of the work produced.

Specialized Teledyne encoders are also incorporated in many electro-mechanical devices such as robots in order to provide precise positioning information.

Teledyne also makes a variety of analytical instruments for pollution control, mine and industrial safety, petrochemical process control, and for medical and deep sea saturation diving applications.

These include percentage and parts per million oxygen detectors, hydrocarbon detectors and photometric instruments for measuring oil or phenol in water and dozens of other chemicals in the parts per million or billion range. Other related products include a variety of instruments for the physical testing of materials; meteorological instruments; equipment and services for the detection, monitoring and analysis of radioactive materials including dosimeters for monitoring the exposure levels of nuclear industry personnel; high-speed motion picture cameras; and equipment for the film recording of video images.

Computer-based control systems are provided to the petrochemical industry for controlling the flow of natural gas and oil through nationwide networks of pipelines. Electrically actuated control valves and large safety relief valves are supplied to this as well as to other industries.

Teledyne also produces a complete line of geophysical instrumentation and related computer systems that are used throughout the world in earthquake monitoring and oil exploration.

In addition, Teledyne carries out seismic surveys under the sea bottom on a contract basis to locate likely oil-bearing strata for major oil companies.

Related activities include the fabrication and installation of large offshore platforms for the oil industry, as well as drilling and workover services and a variety of maintenance and salvage operations carried out in offshore areas.

The Company owns and operates sea-going derrick barges with up to 800-ton lifting capacity and numerous jack-up drilling rigs to carry on this work for the oil industry.

Sophisticated computer-designed gas lift equipment and services are also provided by the Company for increasing the flow from oil wells and controlling the flow on the surface. In addition, producing reservoirs are studied using radioisotopic tracer services provided by the Company.

Uninterruptible power supplies are produced for the computer industry to eliminate computer failures caused by substandard power or momentary power interruptions.

In the event of power failures, Teledyne emergency lighting equipment can provide safe illumination for continuing operations.

Thermoelectric generators fueled with propane or natural gas are made for use in remote, unattended locations where electrical power is required, and other Teledyne thermoelectric generators powered by radioisotopic materials provide power for deep space missions. This same Teledyne company also produces high purity electrolytic hydrogen generators that are used in many laboratory and industrial applications.

Consumer: The Teledyne name is widely represented through its consumer products.

Teledyne's best known consumer products are sold under the brand name of Teledyne Water Pik. The Water Pik® oral hygiene appliance line includes a family of dental hygiene devices for use in the home, including oral irrigators, electric toothbrushes and an oral hygiene center combining both products.

Teledyne Water Pik also manufactures and markets a complete line of showerheads, including the Shower Massage® line of invigorating, pulsating showerheads and the Super Saver® line of energy saving, multi-mode spray showerheads.

The Instapure® line includes both faucet mounted and under-the-counter water filters for improving the quality of water used in the home, as well as a line of air filtration appliances for the home and office that utilize a patented low temperature catalyst material to remove carbon monoxide and other noxious gases from the air.

In an entirely different consumer area are Teledyne Laars swimming pool and spa heaters. The company also produces a full line of water heating equipment that provides hot water for commercial, residential and industrial space heating.

Teledyne also makes supplies and equipment for dentists and dental laboratories. Among these are dental cements, impression compounds, filling materials, tungsten carbide and diamond drilling burs, air and electric drills, and articulators.

Teledyne produces drafting media and materials used for the creation of engineering drawings and diazo equipment required to reproduce and disseminate such information, as well as microfilm and microfiche.

Products often sold directly to consumers are battery powered lamps, lanterns, engineering drafting supplies for professional and school use, plastic cups, containers, and wood specialty products.

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This **Teledyne Report** covers the development of a new Runway Visual Range system that has been carried out by Teledyne Controls under contract with the Federal Aviation Administration. Using new forward scatter infrared technology, and advanced microprocessor-based data processing and self-diagnostic hardware and software, the new system will provide accurate runway visibility to air traffic controllers, and substantially reduce the cost of maintenance, calibration and repair that existing systems require.

Teledyne Controls is a major developer and producer of electronic systems for the commercial aviation market, and its products are known and used worldwide. Other systems include automatic airborne communication systems that relieve airline pilots of routine air/ground operational communications, and Aircraft Condition Monitoring Systems (ACMS) that monitor the in-flight condition of commercial aircraft for operational and maintenance purposes.

Teledyne Report, featuring subjects of particular interest among Teledyne activities, is issued on a quarterly basis. Previous topics include:

Reverse Osmosis:
Clean, clear water for the home.

Analytical Instruments:
Tools for chemical detectives.

Hi-E:
Energy saving water heaters.

Seismology:
Monitoring tremors and treaties.

Instruments:
Measuring wear/measuring pressure.

Dies and Molds:
Making the tools that make the cars.

Aircraft Ground Power Systems:
New turbine technology.

Crash Fire Rescue Vehicles:
Getting there faster with more.

The Inner Zone:
Defending aircraft carriers.

Doppler:
New waves in navigation.

Superconductivity:
Turning up the heat.

Unmanned Airplanes:
Advanced developments.

Composites:
Ultra-light structures for aircraft.

Integrated Circuits:
Bridging the analog and digital worlds.

Microelectronic Hybrids:
State-of-the-art 1987.

Voyager Engine:
Around the world nonstop in 9 days.

Forming Metal:
Lightweight structures for aircraft.

Radon:
Measuring it from the ground up.

IFF:
Electronic passwords for aircraft.

Star Wares:
Products & services for space.

The Water Products:
For health and personal care.

An Ideal Package:
A look at collapsible metal tubes.

Airline Communications:
The digital connection.

High Performance Metals:
Tough alloys for tough environments.

Airframes:
Structures for aircraft.

The Ladle and the Hammer:
Casting and forging iron and steel.

High Tech Wire:
Taking the heat safely.

Electronic Counter Measures:
Protecting friendly forces.

Rubber & Metal:
Working together in automobiles.

Stress Analysis:
How much is enough?

Drafting:
Designs to build by.

Systems Engineering:
Creating complex systems.

Flexible Printed Circuits:
The space age connection.

Mixing:
A fine blend of art and science.

Aircraft Ground Support:
Saving the airlines millions.

Turbine Engines:
Smaller in size and cost.

Heating Water:
For health and home.

Relays:
Thriving in an ultraminiature world.

Truth In Radiation:
A matter of accurate measurement.

Remotely Piloted Vehicles:
Those ingenious flying machines.

Mining Tungsten:
From glowing ore to versatile metal.

Columbium:
From superconductivity to computers.

Energy:
Fueling spaceship earth.

Radar:
Sensing the unseeable.

Fluid Power:
Muscle for machines.

Pipeline Controls:
Operating petroleum pipelines.

The Aerospace Metals:
Superalloys and titanium.

Screw Threading:
Machine tools for industry.

Aerial Mapping:
Advanced digital techniques.

The Water Pik Story:
Innovative consumer product designs.

Dental Health:
Supplies for the dentist.

Space Navigation:
Computers that guide space launches.

Analytical Instruments:
Chemical detection for industry.

1776–1976:
Technology then and now.

The Refractory Twins:
Producing tungsten and molybdenum.

The Instrument Makers:
Instruments and optical encoders.

Industrial Engines:
Small piston engines.

Job Corps:
Teaching young people new skills.

Friendly Explosives:
Aircraft emergency escape systems.

Microelectronic Hybrids:
The step beyond integrated circuits.

The Energy Options:
Nuclear fuel versus coal.

Drilling for Offshore Oil:
Getting the oil out.

The Search for Oil:
Finding new oil deposits.

High Speed Steels:
Premium alloys for machine tools.

Energy Crisis in the Computer Room:
Controlling power quality.

Raydist:
Super-precise radiolocation system.

Welding:
Advanced alloys for joining metals.

General Aviation Engines:
Piston power for aircraft.

Rubber:
Products for automobiles and industry.

Loran:
All-weather navigation system.

Seismology:
Instruments for earthquakes.

Casting:
Precision production of metal parts.

Aircraft Integrated Data Systems:
Monitoring commercial aircraft.

Thermoelectrics:
Direct conversion of heat to electricity.

Thin Metals:
How they are made and used.

The Crowded Spectrum:
Microwave traveling wave tubes.

Science and Cinematography:
Motion pictures for scientific analysis.

Superalloys:
High temperature metals.

Jets of Water for Dental Health:
The Water Pik Oral Hygiene appliance.

TELEDYNE, INC.