

APPENDIX A—SATURN V SUBCONTRACTORS

The following are lists of subcontractors who have played a major role in the development and production of the Saturn V launch vehicle. It should be

recognized that many more subcontractors contributed to the total vehicle and program; however, it is not practical to list all in this document.

BOEING MAJOR SUBCONTRACTORS

SUBCONTRACTOR	LOCATION	PRODUCT
Aeroquip Corp.	Jackson, Mich.	Couplings, pneumatic, and hydraulic hoses
Aircraft Products	Dallas, Tex.	Machined parts
AiResearch Manufacturing Co.	Phoenix, Ariz.	Valves
Applied Dynamics, Inc.	Ann Arbor, Mich.	Analog computers
Arrowhead Products, Div. of Federal-Mogul Corp.	Los Alamitos, Calif.	Ducts
The Bendix Corp., Pioneer-Central Div.	Davenport, Iowa	Loading systems and cutoff sensors
Bourns, Inc. Instrument Div.	Riverside, Calif.	Pressure transducers
Brown Engineering Co., Inc.	Lewisburg, Tenn.	Multiplexer equipment
The J. C. Carter Co.	Costa Mesa, Calif.	Solenoid valves
Consolidated Controls Corp.	Bethel, Conn. Los Angeles, Calif.	Pressure switches, transducers, and valves
The Eagle-Picher Co., Chemical and Metals Div.	Joplin, Mo.	Batteries
Electro Development Corp.	Seattle, Wash.	AC and DC amplifiers
Flexible Tubing Corp.	Anaheim, Calif.	Ducts
Flexonics, Div. of Calumet and Hecla, Inc.	Bartlett, Ill.	Ducts
General Precision, Inc. Link Ordnance Div.	Sunnyvale, Calif.	Propellant dispersion systems
Gulton Industries, C. G. Electronics Div.	Albuquerque, N. M.	Wiring boards
Hayes International Corp.	Birmingham, Ala.	Auxiliary nitrogen supply units
Hydraulic Research and Manufacturing Co.	Burbank, Calif.	Servoactuators and filter manifolds
Johns-Manville Sales Corp.	Manville, N. J.	Insulation
Kinetics Corporation of California	Solano Beach, Calif.	Power transfer switches
Ling-Temco-Vought, Inc.	Dallas, Tex.	Skins, emergency drains, and heat shield curtains
Marotta Valve Corp.	Boonton, N. J.	Valves
Martin Marietta Corp.	Baltimore, Md.	Helium bottles
Moog, Inc.	East Aurora, N. Y.	Servoactuators
Navan Products, Inc.	El Segundo, Calif.	Seals
Parker Aircraft Co.	Los Angeles, Calif.	Valves
Parker Seal Co.	Culver City, Calif.	Seals
Parsons Corp.	Traverse City, Mich.	Tunnel assemblies

BOEING MAJOR SUBCONTRACTORS (continued)

SUBCONTRACTOR	LOCATION	PRODUCT
Precision Sheet Metal, Inc.,	Los Angeles, Calif.	Filter screens, anti-vortex, and adapter assemblies
Purolator Products, Inc., Western Div.	Newbury Park, Calif.	Umbilical couplings
Kandall Engineering Co.	Los Angeles, Calif.	Valves
Raytheon Co.	Waltham, Mass.	Cathode ray tube display system
Rohr Corp.	Chula Vista, Calif.	Heat shields
Servonic Instruments, Inc.	Costa Mesa, Calif.	Pressure transducers
Solar, Division of International Harvester	San Diego, Calif.	Ducts
Southwestern Industries, Inc.	Los Angeles, Calif.	Calips pressure switches
Space Craft, Inc.	Huntsville, Ala.	Converters
Stainless Steel Products, Inc.	Burbank, Calif.	Ducts
Standard Controls, Inc.	Seattle, Wash.	Pressure transducers
Statham Instruments, Inc.	Los Angeles, Calif.	Pressure transducers
Sterer Engineering and Manufacturing Co.	Los Angeles, Calif.	Valves
Stresskin Products Co.	Costa Mesa, Calif.	Insulation
Systron-Donner Corp.	Concord, Calif.	Servo accelerometers
Thiokol Chemical Corp., Elkton Div.	Elkton, Md.	Retrorockets
Trans-Sonics, Inc.	Burlington, Mass.	Measuring systems and thermometers
Unidynamics/St. Louis, A Division of UMC Industries, Inc.	St. Louis, Mo.	Spools, harnesses and ducts
United Control Corp.	Redmond, Wash.	Ordnance devices and control assemblies
Vacco Industries	South El Monte, Calif.	Filters, relief valves, and regulators
Whittaker Corp.	Chatsworth, Calif.	Valves and gyros
Fred D. Wright Co., Inc.	Nashville, Tenn.	Support assemblies and measuring racks

DOUGLAS MAJOR SUBCONTRACTORS

SUBCONTRACTOR	LOCATION	PRODUCT
Accessory Products Co., Div. of Textron, Inc.	Whittier, Calif.	Valves/heaters
Aeroquip Corp., Marman Div.	Los Angeles, Calif.	Clamps
Airdrome Parts Co.	Inglewood, Calif.	Fittings
AiResearch Mfg. of Ariz.	Phoenix, Ariz.	Valves
Airtex Dynamics, Inc.	Compton, Calif.	Tank assemblies
Amco Engineering Co.	Chicago, Ill.	Cabinets
American Electronics, Inc.	Fullerton, Calif.	Batteries
Amp, Inc.	Harrisburg, Pa.	Electrical panels
Ampex, Corp.	Los Angeles, Calif.	Tape recorders
Amphenol Borg Electronics Corp.	Chicago, Ill.	Connectors
Anaconda Metal Hose Div.	Waterbury, Conn.	Metal hose

DOUGLAS MAJOR SUBCONTRACTORS (continued)

SUBCONTRACTOR	LOCATION	PRODUCT
Astrodata, Inc.	Anaheim, Calif.	Telemetry
Avnet Corp.	Westbury, L. I., N. Y.	Electrical connectors
Barry Controls	Watertown, Mass.	Electronic controls
Bertea Products	Pasadena, Calif.	Transmitter Fabricated assemblies
Brown Engineering Co., Inc.	Huntsville, Ala.	Telemetry equipment
Calmec Mfg. Co.	Los Angeles, Calif.	Valves
Capital Westward, Inc.	Paramount, Calif.	Filters
Christie Electric Corp.	Los Angeles, Calif.	Meters
Consolidated Electrodynamics	New York, N. Y.	Electronic equipment
Data Sensors	Gardena, Calif.	Transducers
Deutsch	Los Angeles, Calif.	Fittings
Dynatronics, Inc.	Orlando, Fla.	Telemetry equipment
Eagle-Picher Co.	Joplin, Mo.	Batteries
Electra Scientific Corp.	Fullerton, Calif.	Transducers
Electrada Corp.	Culver City, Calif.	Electrical components
Fairchild Camera Inst. Corp.	Plainview, L. I., N. Y.	Cameras, oscilloscopes
Fairchild Controls Div.	Montebello, Calif.	Valves
Fairchild Hiller Corp.	Bayshore, L. I., N. Y.	Valves
Fairchild Semiconductor	Hollywood, Calif.	Semiconductors
Fairchild Stratos	Bayshore, L. I., N. Y.	Valves
Flexible Metal Hose Mfg. Co.	Costa Mesa, Calif. Northridge, Calif.	Metal hose
Flomatics, Inc.	Natoma, Calif.	Valves
Frebank Co.	Glendale, Calif.	Switches
Control Data Corp.	Minneapolis, Minn.	Computers
General Electric Co.	Waterford, N. Y.	Electrical components
Giannini Controls Corp.	Durate/Pasadena, Calif.	Transducers
Grove Valve Regulator Co.	El Segundo/Oakland, Calif.	Valves
Hadley, B. H. Co.	Pomona, Calif.	Relays
Hewlett Packard Co.	Pasadena, Calif.	Oscilloscopes/recorder
Hexcel Products, Inc.	Berkeley, Calif.	Honeycomb panels
Honeywell, Inc.	Minneapolis, Minn.	Temperature controls, gyros, sensors
ITT Wire and Cable	Clinton, Mass.	Wire and cable
K-Tronics	Los Angeles, Calif.	Semiconductors
Kaiser Aluminum Chemical Sales, Inc.	Spokane, Wash. Halethrope, Md.	Raw material, cable
Kinetics, Corp.	Solano Beach, Calif.	Electronic equipment
Ladewig Valve	Los Angeles, Calif.	Valves
Lanagan, W. M. Co., Inc.	Costa Mesa, Calif.	Valves
Leonard, Wallace O., Inc.	Pasadena, Calif.	Valves
Linde Co., Div. Union Carbide	El Monte, Calif.	Batteries
Litton Industries of Calif.	Beverly Hills, Calif.	Transducers
Magnesium Alloy Prods. Co.	Compton, Calif.	Castings
Magnetika, Inc.	Venice, Calif.	Batteries

DOUGLAS MAJOR SUBCONTRACTORS (continued)

SUBCONTRACTOR	LOCATION	PRODUCT
Marotta Valve Corp.	Santa Ana, Calif.	Valves
Marshall, G. S. Co.	San Marino, Calif.	Electronic hardware
Mason Electric Div. Ansul.	Los Angeles, Calif.	Switches
Master Specialties Co.	Los Angeles, Calif.	Meters
Menasco Mfg. Co.	Burbank, Calif.	Fabricated assemblies
Military Products Div., Clary	San Gabriel, Calif.	Elec. fittings
Moog Servo Controls, Inc.	Aurora, N.Y.	Valves
Motorola Semiconductor Products	Hollywood, Calif.	Semiconductors
Pacific Valve, Inc.	Long Beach, Calif.	Valves
Parker Aircraft Co.	Los Angeles, Calif.	Fittings/valves
Pesco Products Div., Borg Warner	Bedford, Ohio	Pumps
Philco Corp.	Philadelphia, Pa.	Radio equipment
Planautics Corp.	Solano Beach, Calif.	Switches
Potter Brumfield	Princeton, Ind.	Switches, relays
Purolator Products, Inc., Western Div.	Van Nuys, Calif.	Filters
Reynolds Metals Co.	Birmingham, Ala.	Raw material (alum.)
Rosemount Eng. Co.	Minneapolis, Minn.	Temperature controls
Sandorn Co.	Waltham, Mass.	Recorders
Scintilla Div. Bendix	Sidney, N.Y.	Electrical connectors
Sealol Corp.	Providence, R.I.	Valves
Servonic Instruments, Inc.	Costa Mesa, Calif.	Transducers
Signet Scientific	Burbank, Calif.	Ovens
Snap Tite	Union City, Pa.	Connectors
Sperry Gyro Co. Div., Sperry Rand	Great Neck, L.I., N.Y.	Instruments
Stainless Steel Products	Burbank, Calif.	Flexible ducts
Statham Instruments, Inc.	Los Angeles, Calif.	Transducers
TRW, Inc.	Cleveland, Ohio	Attitude control rocket engines
Trans-Sonics, Inc.	Lexington, Mass.	Temperature controls
Technology Instruments Corp.	Newbury Park, Calif.	Potentiometers
Telemetry, Inc., Subsidiary of Arnoux Corp.	Santa Ana, Calif.	Ground support electronics
Texas Instruments, Inc.	Dallas, Tex.	Resistors/transistors
U.S. Steel Corp. U.S. Steel, Supply Div.	Seattle, Wash.	Raw material
Vacco Valve Company	El Monte, Calif.	Valves
Vickers	Detroit, Mich.	Pumps
Vinson Mfg. Co., Inc.	Van Nuys, Calif.	Valves
W & S Industries	El Monte, Calif.	Connectors
Winsco Instruments Control	Santa Monica, Calif.	Temp. control units
Wyman Gordon Co.	Worcester, Mass.	Forgings

IBM MAJOR SUBCONTRACTORS

SUBCONTRACTOR	LOCATION	PRODUCT
Aerodyne Controls Corp.	Farmingdale, N. Y.	First stage regulator Gas bearing pressure regulator

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IBM MAJOR SUBCONTRACTORS (continued)

SUBCONTRACTOR	LOCATION	PRODUCT
Airtek Div., Fansteel Metallurgical Corp.	Compton, Calif.	2-cubic-foot bottle 165-cubic-inch sphere
Applied Microwave Laboratory, Inc.	Andover, Mass.	T/M power divider
Astro Space Laboratories, Inc.	Huntsville, Ala.	Bleeder assembly Union orifice assembly
Automatic Metal Products Corp. AVCO Corp.	Brooklyn, N. Y. Nashville, Tenn. Huntsville, Ala.	Coaxial switch Cable trays Gas bearing mounting panel Measuring range cards Measuring range cards software Thermal conditioning panels
Avion Electronics, Inc.	Paramus, N. J.	Telemetry directional coupler VSWR measuring assembly
Bourns, Inc.	Riverside, Calif.	Transducer pressure gauges
Brown Engineering Co., Inc.	Huntsville, Ala.	Acquisition system Alternating current amplifier assembly Measuring rack selector Measuring rack assembly Mod 145 multiplexers Mod 245 multiplexers Mod 270 multiplexers Pulse code modulated digital data Radio frequency analog Radio frequency pulse code modulated Telemetry assembly A3 Telemetry assembly B1 Telemetry assembly SSB Telemetry calibrators Telemetry pulse code
Chrysler Corp.	Huntsville, Ala.	Q-ball Vehicle plate assembly
Conic Corp.	San Diego, Calif.	UHF transmitter
Cox Instruments Div., Lynch Corp.	Detroit, Mich.	Flowmeters
Eagle-Picher Industries, Inc.	Joplin, Mo.	Primary battery
Electro Development Corp.	Seattle, Wash.	Amplifier direct current Channel selector A Channel selector B
Electronic Communications, Inc.	St. Petersburg, Fla.	Control computer
EIMAC Div., Varian	San Carlos, Calif.	UHF transmitter
The Foxboro Co.	Foxboro, Mass.	Gas temperature probe
Fenwall Electronics, Inc.	Framingham, Mass.	Temperature gauges
Flodyne Controls, Inc.	Linden, N. J.	Shut-off ball valve
Gulton Industries, Inc.	Hawthorne, Calif.	Electrical cables Vibration accelerometers 5-volt power supply
Hamilton-Standard Div., United Aircraft Corp.	Windsor Locks, Conn.	Preflight heat exchanger
Hayes International Corp.	Huntsville, Ala.	Network cables
Hydro-Aire Div., Crane	Burbank, Calif.	Coolant pump, R&D
ITT Wire and Cable Div., International Telephone and Telegraph Corp.	Clinton, Mass.	Wire Cables Coaxial cables

IBM MAJOR SUBCONTRACTORS (continued)

SUBCONTRACTOR	LOCATION	PRODUCT
Marotta Valve Corp.	Boonton, N. J.	Shut-off valve Solenoid valve
Martin Co.	Orlando, Fla.	Control signal processor
Melpar, Inc.	Falls Church, Va.	C-band antenna Command antenna Command directional coupler Command power divider Telemetry antenna Telemetry power divider
Motorola, Inc.	Scottsdale, Ariz.	C-band transponder Command receiver
North American Aviation, Inc.	Tulsa, Okla.	Structure segments
Nortronics Div., Northrop Corp.	Norwood, Mass.	Rate gyro package
Ralph M. Parsons Electronics Corp.	Pasadena, Calif.	Tape recorder
Perkin-Elmer Corp.	Norwalk, Conn.	Retroreflector
Potter Aeronautical Corp.	Union, N. J.	2 flowmeter
Purolator Products, Inc.	Los Angeles, Calif.	Gas bearing pressure regulator Quick disconnect coupling
Rantec Corp.	Calabasas, Calif.	Telemetry RF coupler
Raytheon Co.	Bristol, Tenn.	AZUSA antenna
Resistoflex Corp.	Roseland, N. J.	Flex hose assembly
Rosemount Engineering Co.	Minneapolis, Minn.	2 temperature gauge
Servonic Instruments, Inc.	Costa Mesa, Calif.	2 transducer pressure
Sierra Electronics Div., Philco-Ford Corp.	Menlo Park, Calif.	Coaxial terminal
Solar Div., International Harvester Co.	San Diego, Calif.	Gas bearing heat exchanger Manifold assembly Water methanol accumulator
Space Craft, Inc.	Huntsville, Ala.	CIU 501 Command decode Frequency DC converter 2 multiplexers 410 Servoaccelerometer unit
Spaco, Inc.	Huntsville, Ala.	2 Servoaccelerometer unit
Statham Instruments, Inc.	Los Angeles, Calif.	Control accelerometer
Systron-Donner Corp.	Concord, Calif.	2 Force balance accelerometers
Tavco, Inc.	Santa Monica, Calif.	Pressure switch
Teledyne Precision, Inc.	Hawthorne, Calif.	Thermal probes
Transco Products, Inc.	Venice, Calif.	CCS coaxial switch
TRW, Inc.	Cleveland, O.	Coolant pump
United Control Corp.	Redmond, Wash.	Temperature control assembly
Vacco Industries	South El Monte, Calif.	Filter Quality test filter
Watkins-Johnson Co.	Palo Alto, Calif.	Power amplifier
Wyle Laboratories	Huntsville, Ala.	Component testing Structure testing

NORTH AMERICAN SPACE DIVISION MAJOR SUBCONTRACTORS

SUBCONTRACTOR	LOCATION	PRODUCT
Acoustica Associates	Los Angeles, Calif.	Transducers
American Brake Shoe Co.	Oxnard, Calif.	Hydraulic pumps
Amp, Inc.	Hawthorne, Calif.	Patch panels
Amphenol Space & Missile Systems Div., Amphenol-Borg Electronics Corp.	Chatsworth, Calif.	Patch panels
Astrodata, Inc.	Anaheim, Calif.	Time code generator Digital multimeter
Babcock Relay, Division of Babcock Electronics	Costa Mesa, Calif.	Relays Generator
Barry Controls	Glendale, Calif.	Shock mounts
Boonshaft and Fuchs, Division of Weston	Monterey Park, Calif.	Servoanalyzer
Computer Measurements	San Fernando, Calif.	Counters
Consolidated Electroynamics Corp.	Pasadena, Calif.	Tape recorder
Deutsch Co., Electronic Components Division	Banning, Calif.	Connectors
Electrada Corp.	Culver City, Calif.	Test conductor console
Electronic Specialty Co.	Los Angeles, Calif.	Hybrid junction, band pass, filter, low pass filter
Electroplex, Subsidiary Borg-Warner Corp.	Santa Ana, Calif.	Logic modules Power supplies
Fairchild Precision Metal Products, Division of Fairchild Camera and Instrument	El Cajon, Calif.	Cryogenic lines
B. H. Hadley (Royal Industries)	Pomona, Calif.	Disconnects
Hallicrafters Pacific Division	Santa Ana, Calif.	Power supply
W. O. Leonard, Inc.	Pasadena, Calif.	Vent valves
Micro-Radionics, Inc.	Van Nuys, Calif.	RF couplers
Non-Linear Systems, Inc.	So. Pasadena, Calif.	Scanners
Parker Aircraft Co.	Los Angeles, Calif.	Hydraulic systems
Rantec Corp.	Calabasas, Calif.	Mistram antenna Mistram coupler Multiplexer
Rocketdyne Div., North American Aviation	McGregor, Tex.	Ullage rocket motors
Servonic Instruments, Inc.	Costa Mesa, Calif.	Transducers
Solar Division, International Harvester Corp.	San Diego, Calif.	Cryogenic lines
Stainless Steel Products	Burbank, Calif.	Cryogenic lines
Transco Products, Inc.	Venice, Calif.	Power dividers
United Electroynamics, Inc.	Pomona, Calif.	PCM/RF assemblies

NORTH AMERICAN ROCKETDYNE MAJOR SUBCONTRACTORS

SUBCONTRACTOR	LOCATION	PRODUCT
A & M Castings Inc.	South Gate, Calif.	Aluminum castings

NORTH AMERICAN ROCKETDYNE MAJOR SUBCONTRACTORS (continued)

SUBCONTRACTOR	LOCATION	PRODUCT
Ace Industries	Santa Fe Springs, Calif.	Machined assemblies, nozzles, rotors, stators, and brg. supports
Adept Mfg. Co.	Los Angeles, Calif.	Inducers
Amphenol Corp.	Broadview, Ill.	Connectors
Anaconda Metal Hose	Los Angeles, Calif.	Flex. hoses
Anaconda Amer. Brass Co.	Detroit, Mich.	OFHC copper
Arcee Foundry	Norwalk, Calif.	Castings
Arcturus Mfg. Co.	Oxnard, Calif.	Forgings
Bendix Corp., Scintilla Div.	Sidney, N. Y.	Connectors
Beuhler Corp., Indiana Gear Wks.	Indianapolis, Ind.	Gears and shafts
Borg Warner Corp., Borg Warner Mech. Seals Div.	Vernon, Calif.	Seals
Calif. Doran Heat Treating Co.	Los Angeles, Calif.	Thermal processing of various major engine components
Cam Car Company	Rockford, Ill.	RD bolts
Chicago Rawhide Co.	Chicago, Ill.	Seals
Cleveland Graphite Bronze Div, Clevite Corp.	Cleveland, O.	Seals
Consolidated Electrodynamics Corp.	Pasadena, Calif.	Connectors and transducers
Aerospace Div., DK Mfg. Co.	Batavia, Ill.	Flex lines, bellows and gimbals
Fairchild Metal Products Div. Fairchild Camera & Instru.	El Cajon, Calif.	Bellows, ducts, gimbals, and line assemblies
General Labs, Inc.	Norwich, N. Y.	Exciters and igniters
Globe Aerospace	North Hollywood, Calif.	Machined metal parts, fittings, and elbows
Herlo Engineering Corp.	Hawthorne, Calif.	Major machined components
Hollywood Plastics, Inc.	Los Angeles, Calif.	ABS Royalite closures, covers, and other protective devices
Howmet Corp., Austenal Div.	Dover, N. J.	Castings
Huntington Alloys, International Nickel Co.	Huntington, W. Va.	Inco sheet and plate
Industrial Tectonics, Inc. General Controls, Inc.	Burbank, Calif.	Actuators, brgs.
Kentucky Metals	Louisville, Ky.	Honeycomb
L. A. Gauge Co., Inc.	Sun Valley, Calif.	Valves
Langley Corp.	San Diego, Calif.	Seals, gimbals, machined assemblies
LeFiell Mfg. Co.	Santa Fe Springs, Calif.	Tubing--thrust chamber
McWilliams Forge Co.	Rockaway, N. J.	Forgings
Orbit Machine Corp.	Gardena, Calif.	Seals
Parker Seal Company	Culver City, Calif.	O-Rings, seals, and orifice plates
Paragon Die Tool & Engr.	Pacoima, Calif.	Stators, brg. supports
Precision Sheet Metal, Inc.	Los Angeles, Calif.	Major sheet metal subassemblies, jackets

NORTH AMERICAN ROCKETDYNE MAJOR SUBCONTRACTORS (continued)

SUBCONTRACTOR	LOCATION	PRODUCT
Quadrant Engr. Company	Gardena, Calif.	Valves and components
Reisner Metals, Inc.	South Gate, Calif.	Forgings
Rohr Corp.	Chula Vista, Calif.	Major sheet metal subassemblies
Rosemount Engr. Co.	Minneapolis, Minn.	Pressure and temp. transducers
Scientific Data Systems	Pomona, Calif.	Circuit boards
Southwestern Industries	Los Angeles, Calif.	Switches
Solar, Div. of International Harvester Co.	San Diego, Calif.	Valves
Statham Instruments	Los Angeles, Calif.	Transducers, connectors, electronic assemblies
Standard Pressed Steel	Santa Ana, Calif. & Jenkinstown, Penna.	RD bolts
Texas Instruments	Dallas, Tex.	Transistors
Turbo Cast Inc.	Los Angeles, Calif.	Castings
Union Carbide Corp., Haynes Stellite Div.	Kokomo, Ind.	Castings, Hastelloy C, Rene 41
Viking Forge & Steel Co.	Albany, Calif.	Forgings
Western Arc Welding Co.	Los Angeles, Calif.	Welded assemblies
Western Way Inc.	Van Nuys, Calif.	Ducts, line assemblies, heat exchangers
Winsco Instruments & Controls	Santa Monica, Calif.	Transducer and receptacles, temp. and pressure transducers
Wyman-Gordon Company	N. Grafton, Mass.	Forgings