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## Chapter 16 Worker Characteristic Structure

All of the worker characteristics available for use with VALE are listed below with a brief description. In addition, the range of values allowed for each characteristic is shown. Following this abbreviated listing is a more detailed description of the characteristics and how they interact with VALE.

<u>CHARACTERISTIC</u> <u>CLASS</u>	<u>CHARACTERISTIC</u>	<u>CHARACTERISTIC</u> <u>VALUE</u>
Aptitudes	G - General Learning Ability	1 to 5 (5 is low)
	V - Verbal	
	N - Numerical	
	S - Spatial	
	P - Form Perception	
	Q - Clerical Perception	
	K - Motor Coordination	
	F - Finger Dexterity	
	M - Manual Dexterity	
	E - Eye-Hand-Foot Coordination	
	C - Color Discrimination	
Census/DOT Data	Census Code	3 to 889
	Census Group	1 to 6
	DOT Code	(see the <u>Dictionary of Occupational Titles</u> )
Data, People, Things	Data (4th digit of DOT job number)	0 to 6 (6 is low)
	People (5th digit of DOT job number)	0 to 8 (8 is low)
	Things (6th digit of DOT job number)	0 to 7 (7 is low)
Environmental Conditions	Exposure to Weather	1 - Not Present
	Extreme Cold	2 - Occasionally
	Extreme Heat	3 - Frequently
	Wet and/or Humid	4 - Constantly
	Noise Intensity Level	1 - Very Quiet 2 - Quiet 3 - Moderate 4 - Loud 5 - Very Loud

<u>CHARACTERISTIC CLASS</u>	<u>CHARACTERISTIC</u>	<u>CHARACTERISTIC VALUE</u>
	Vibration	1 - Not Present 2 - Occasionally 3 - Frequently 4 - Constantly
	Atmospheric Conditions	
	Proximity to Moving Mechanical Parts	
	Exposure to Electrical Shock	
	Working High, Exposed Places	
	Exposure to Radiation	
	Working with Explosives	
	Exposure to Toxic or Caustic Chemicals	
	Other Environmental Conditions	
Physical Demands	Climbing	1 - Not Present 2 - Occasionally 3 - Frequently 4 - Constantly
	Balancing	
	Stooping	
	Kneeling	
	Crouching	
	Crawling	
	Reaching	
	Handling	
	Fingering	
	Feeling	
	Talking	
	Hearing	
	Tasting/Smelling	
	Near Acuity	
	Far Acuity	
	Depth Perception	
	Accommodation	
	Color Vision	
	Field of Vision	
Strength	1 - Sedentary 2 - Light 3 - Medium 4 - Heavy 5 - Very Heavy	
Reasoning, Math, Language	Reasoning	1 to 6 (1 is low)
	Math	
	Language	
SVP	Specific Vocational Preparation	1 to 9 (1 is low)

## Aptitudes

Aptitudes refer to specific capacities or abilities required of an individual in order to facilitate the learning of some task or job duty. Each job title has been assigned one of five specific levels for each of eleven aptitudes. These levels reflect equivalent amounts of the aptitudes possessed by segments of the working population, as follows:

<b>LEVEL</b>	<b>DEFINITION</b>
1	<i>The top ten percent of the population.</i> This segment of the population possesses an extremely high degree of the aptitude.
2	<i>The highest third exclusive of the top 10 percent of the population.</i> This segment of the population possesses an above average or high degree of the aptitude.
3	<i>The middle third of the population.</i> This segment of the population possesses a medium degree of the aptitude, ranging from slightly below to slightly above average.
4	<i>The lowest third exclusive of the bottom 10 percent of the population.</i> This segment of the population possesses a below average or low degree of the aptitude.
5	<i>The lowest 10 percent of the population.</i> This segment of the population possesses a negligible degree of the aptitude.

<b>APTITUDE (VALE CHARACTERISTIC)</b>	<b>WHAT IT MEANS</b>
G - General Learning	The ability to "catch on" or understand instructions and underlying principles; the ability to reason and make judgments. Closely related to doing well in school.
V - Verbal	The ability to understand meaning of words and to use them effectively. The ability to comprehend language, to understand relationships between words, and to understand meanings of whole sentences and paragraphs.
N - Numerical	The ability to perform arithmetic operations quickly and accurately.
S - Spatial	Ability to think visually of geometric forms and to comprehend the two-dimensional representation of three-dimensional objects. The ability to recognize the relationships resulting from the movement of objects in space.

<b><u>APTITUDE (VALE CHARACTERISTIC)</u></b>	<b><u>WHAT IT MEANS</u></b>
P - Form Perception	Ability to perceive pertinent detail in objects or in pictorial or graphic material. Ability to make visual comparisons and discriminations and see slight differences in shapes and shadings of figures and widths and lengths of lines.
Q - Clerical Perception	Ability to perceive pertinent detail in verbal or tabular material. Ability to observe differences in copy, to proofread words and numbers, and to avoid perceptual errors in arithmetic computation. A measure of speed of perception is required in many industrial jobs even when the job does not have verbal or numerical content.
K - Motor Coordination	Ability to coordinate eyes and hands or fingers rapidly and accurately in making precise movements with speed. Ability to make movement response accurately and swiftly.
F - Finger Dexterity	Ability to move fingers, and manipulate small objects with fingers, rapidly or accurately.
M - Manual Dexterity	Ability to move hands easily and skillfully. To work with hands in placing and turning motions.
E - Eye-Hand-Foot Coordination	Ability to move the hand and foot coordinately with each other in accordance with visual stimuli.
C - Color Discrimination	The ability to match or discriminate between colors in terms of hue, saturation, and brilliance. To identify a particular color or color combination from memory and be able to perceive harmonious or contrasting color combinations.

Examples of Usage Within VALE:

- 'General Learning Ability = 3' selects jobs that require an average degree of general learning ability.
- 'Finger Dexterity < 3' selects jobs that require a below average or negligible degree of finger dexterity
- 'Manual Dexterity <= 3' selects jobs that require an average, below average, or negligible degree of manual dexterity.

## Census/DOT Data

### Census Code

In order for a job to be accessed by VALE, it must be cross-walked to one of 501 three-digit Census Code Category Numbers (CCNs). Using this variable, you may specify a range of CCNs to include or omit in a given report. Census Code categories are numbered in broken sequence beginning with '3' and ending with '889', as shown below.

<u>CENSUS CODE</u>	<u>JOB TITLE</u>
3	Legislators
4	Chief Executives/General Admin, Public
5	Administrators/Officials, Public Admin
6	Administrators, Protective Services
7	Financial Managers
8	Personnel and Labor Relations Managers
9	Purchasing Managers
13	Managers, Market/Advertising, Public Rel
14	Administrators, Educ and Related Fields
15	Managers, Medicine and Health
16	Postmasters and Mail Superintendents
17	Managers, Food Serving & Lodging Estabs
18	Managers, Properties and Real Estate
19	Funeral Directors
21	Managers, Service Organizations, NEC
22	Managers and Administrators, NEC
23	Accountants and Auditors
24	Underwriters
25	Other Financial Officers
26	Management Analysts
27	Personnel, Training, and Labor Rel Spec
28	Purchasing Agents and Buyers, Farm Prod
29	Buyers, Whsle/Retail Trade Exc Farm Prod
33	Purchasing Agents and Buyers NEC
34	Business and Promotion Agents
35	Construction Inspectors
36	Inspectors/Compliance Officers, Exc Const
37	Management Related Occupations, NEC
43	Architects
44	Aerospace Engineers
45	Metallurgical and Materials Engineers
46	Mining Engineers
47	Petroleum Engineers
48	Chemical Engineers
49	Nuclear Engineers

<b><u>CENSUS CODE</u></b>	<b><u>JOB TITLE</u></b>
53	Civil Engineers
54	Agricultural Engineers
55	Electrical and Electronic Engineers
56	Industrial Engineers
57	Mechanical Engineers
58	Marine and Naval Architects
59	Engineers, NEC
63	Surveyors and Mapping Scientists
64	Computer Systems Analysts and Scientists
65	Operations & Systems Researchers/Analysts
66	Actuaries
67	Statisticians
68	Mathematical Scientists, NEC
69	Physicists and Astronomers
73	Chemists, Except Biochemists
74	Atmospheric and Space Scientists
75	Geologists and Geodesists
76	Physical Scientists, NEC
77	Agricultural and Food Scientists
78	Biological and Life Scientists
79	Forestry and Conservation Scientists
83	Medical Scientists
84	Physicians
85	Dentists
86	Veterinarians
87	Optometrists
88	Podiatrists
89	Health Diagnosing Practitioners, NEC
95	Registered Nurses
96	Pharmacists
97	Dietitians
98	Respiratory Therapists
99	Occupational Therapists
103	Physical Therapists
104	Speech Therapists
105	Therapists, NEC
106	Physicians' Assistants
113	Earth, Environmental, Marine Sci Teachers
114	Biological Science Teachers
115	Chemistry Teachers
116	Physics Teachers
117	Natural Science Teachers, NEC
118	Psychology Teachers
119	Economics Teachers

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<b><u>CENSUS CODE</u></b>	<b><u>JOB TITLE</u></b>
123	History Teachers
124	Political Science Teachers
125	Sociology Teachers
126	Social Science Teachers, NEC
127	Engineering Teachers
128	Mathematical Science Teachers
129	Computer Science Teachers
133	Medical Science Teachers
134	Health Specialties Teachers
135	Business, Commerce, Marketing Teachers
136	Agriculture and Forestry Teachers
137	Art, Drama, and Music Teachers
138	Physical Education Teachers
139	Education Teachers
143	English Teachers
144	Foreign Language Teachers
145	Law Teachers
146	Social Work Teachers
147	Theology Teachers
148	Trade and Industrial Teachers
149	Home Economic Teachers
153	Teachers, Postsecondary, NEC
154	Postsecondary Teachers, Subj Unspecified
155	Teachers, Prekindergarten & Kindergarten
156	Teachers, Elementary School
157	Teachers, Secondary School
158	Teachers, Special Education
159	Teachers, NEC
163	Counselors, Educational and Vocational
164	Librarians
165	Archivists and Curators
166	Economists
167	Psychologists
168	Sociologists
169	Social Scientists, NEC
173	Urban Planners
174	Social Workers
175	Recreation Workers
176	Clergy
177	Religious Workers, NEC
178	Lawyers
179	Judges
183	Authors
184	Technical Writers



<b><u>CENSUS CODE</u></b>	<b><u>JOB TITLE</u></b>
185	Designers
186	Musicians and Composers
187	Actors and Directors
188	Painters, Sculptors, Craftsmen, Print-Maker
189	Photographers
193	Dancers
194	Artists, Performers, Related Workers, NEC
195	Editors and Reporters
197	Public Relations Specialists
198	Announcers
199	Athletes
203	Clinical Lab Technologists/Technicians
204	Dental Hygienists
205	Health Record Technologists/Technicians
206	Radiologic Technicians
207	Licensed Practical Nurses
208	Health Technologists/Technicians, NEC
213	Electrical and Electronic Technicians
214	Industrial Engineering Technicians
215	Mechanical Engineering Technicians
216	Engineering Technicians, NEC
217	Drafting Occupations
218	Surveying and Mapping Technicians
223	Biological Technicians
224	Chemical Technicians
225	Science Technicians, NEC
226	Airplane Pilots and Navigators
227	Air Traffic Controllers
228	Broadcast Equipment Operators
229	Computer Programmers
233	Tool Programmers, Numerical Control
234	Legal Assistants
235	Technicians, NEC
243	Supervisors/Proprietors, Sales Occupation
253	Insurance Sales Occupations
254	Real Estate Sales Occupations
255	Securities/Financial Serv Sales Occup
256	Advertising & Related Sales Occupations
257	Sales Occupations, Other Business Serv
258	Sales Engineers
259	Sales Rep, Mining, Manufacturing, Wholesale
263	Sales Workers, Motor Vehicles and Boats
264	Sales Workers, Apparel
265	Sales Workers, Shoes

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<b><u>CENSUS CODE</u></b>	<b><u>JOB TITLE</u></b>
266	Sales Workers, Furniture/Home Furnishings
267	Sales Workers Radio, TV, Hi-Fi, Appliances
268	Sales Workers, Hardware/Building Supplies
269	Sales Workers, Parts
274	Sales Workers, Other Commodities
275	Sales Counter Clerks
276	Cashiers
277	Street and Door-To-Door Sales Workers
278	News Vendors
283	Demonstrators, Promoters and Models, Sales
284	Auctioneers
285	Sales Support Occupations, NEC
303	Supervisors, General Office
304	Supervisors, Computer Equipment Operators
305	Supervisors, Financial Records Processing
306	Chief Communications Operators
307	Supervisors, Distrib, Schedul, Adjust Clrks
308	Computer Operators
309	Peripheral Equipment Operators
313	Secretaries
314	Stenographers
315	Typists
316	Interviewers
317	Hotel Clerks
318	Transportation Ticket/Reservation Agents
319	Receptionists
323	Information Clerks, NEC
325	Classified-Ad Clerks
326	Correspondence Clerks
327	Order Clerks
328	Personnel Clerks, Exc Payroll/Timekeeping
329	Library Clerks
335	File Clerks
336	Records Clerks
337	Bookkeepers, Accounting, Auditing Clerks
338	Payroll and Timekeeping Clerks
339	Billing Clerks
343	Cost and Rate Clerks
344	Billing, Posting, Calculat Machine Oper
345	Duplicating Machine Operators
346	Mail Preparing/Paper Handling Mach Oper
347	Office Machine Operators, NEC
348	Telephone Operators
353	Communications Equipment Oper, NEC

<b><u>CENSUS CODE</u></b>	<b><u>JOB TITLE</u></b>
354	Postal Clerks, Exc Mail Carriers
355	Mail Carriers, Postal Service
356	Mail Clerks, Exc Postal Service
357	Messengers
359	Dispatchers
363	Production Coordinators
364	Traffic, Shipping, and Receiving Clerks
365	Stock and Inventory Clerks
366	Meter Readers
368	Weighers, Measurers, Checkers & Samplers
373	Expeditors
374	Material Recording, Sched Clerks, NEC
375	Insurance Adjusters, Examiners, Investig
376	Investigators and Adjusters, Exc Insuranc
377	Eligibility Clerks, Social Welfare
378	Bill and Account Collectors
379	General Office Clerks
383	Bank Tellers
384	Proofreaders
385	Data-Entry Keyers
386	Statistical Clerks
387	Teachers' Aides
389	Administrative Support Occup, NEC
403	Launderers and Ironers
404	Cooks, Private Household
405	Housekeepers and Butlers
406	Child Care Workers, Private Household
407	Private Household Cleaners and Servants
413	Supervisors, Firefighting/Fire Prev Occup
414	Supervisors, Police and Detectives
415	Supervisors, Guards
416	Fire Inspection/Fire Prev Occupations
417	Firefighting Occupations
418	Police and Detectives, Public Service
423	Sheriffs, Bailiffs, Law Enforc Officers
424	Correctional Institution Officers
425	Crossing Guards
426	Guards and Police, Exc Public Service
427	Protective Service Occupations, NEC
433	Supervisors, Food Prep/Service Occup
434	Bartenders
435	Waiters and Waitresses
436	Cooks
438	Food Counter/Fountain/Related Occupation

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<b><u>CENSUS CODE</u></b>	<b><u>JOB TITLE</u></b>
439	Kitchen Workers, Food Preparation
443	Waiters/Waitresses' Assistants
444	Miscellaneous Food Preparation Occup
445	Dental Assistants
446	Health Aides, Except Nursing
447	Nursing Aides, Orderlies, and Attendants
448	Supervisors, Cleaning/Bldg Serv Worker
449	Maids and Housemen
453	Janitors and Cleaners
454	Elevator Operators
455	Pest Control Occupations
456	Supervisors, Personal Service Occup
457	Barbers
458	Hairdressers and Cosmetologists
459	Attendants, Amusement/Recreation Facility
461	Guides
462	Ushers
463	Public Transportation Attendants
464	Baggage Porters and Bellhops
465	Welfare Service Aides
466	Family Child Care Providers
467	Early Childhood Teacher's Assistants
468	Child Care Workers, NEC
469	Personal Service Occupations, NEC
473	Farmers, Except Horticultural
474	Horticultural Specialty Farmers
475	Managers, Farms, Except Horticultural
476	Managers, Horticultural Specialty Farms
477	Supervisors, Farm Workers
479	Farm Workers
483	Marine Life Cultivation Workers
484	Nursery Workers
485	Supervisors, Related Agricult Occupations
486	Groundskeepers and Gardeners, Except Farm
487	Animal Caretakers, Except Farm
488	Graders and Sorters, Agricult Products
489	Inspectors, Agricultural Products
494	Supervisors, Forestry/Logging Workers
495	Forestry Workers, Except Logging
496	Timber Cutting/Logging Occupations
497	Captains & Officers, Fishing Vessels
498	Fishers
499	Hunters and Trappers
503	Supervisors, Mechanics and Repairers

<b><u>CENSUS CODE</u></b>	<b><u>JOB TITLE</u></b>
505	Automobile Mechanics
506	Automobile Mechanic Apprentices
507	Bus, Truck, Stationary Engine Mechanics
508	Aircraft Engine Mechanics
509	Small Engine Repairers
514	Automobile Body and Related Repairers
515	Aircraft Mechanics, Exc Engine
516	Heavy Equipment Mechanics
517	Farm Equipment Mechanics
518	Industrial Machinery Repairers
519	Machinery Maintenance Occupations
523	Electronic Repairers, Commun/Indust Equip
525	Data Processing Equipment Repairers
526	Household Appliance/Power Tool Repairers
527	Telephone Line Installers and Repairers
529	Telephone Installers and Repairers
533	Misc Elec/Electronic Equip Repairers
534	Heating, Air Cond, Refrigeration Mechanics
535	Camera, Watch, Musical Instrument Repairer
536	Locksmiths and Safe Repairers
538	Office Machine Repairers
539	Mechanical Controls and Valve Repairers
543	Elevator Installers and Repairers
544	Millwrights
547	Specified Mechanics and Repairers, NEC
549	Not Specified Mechanics and Repairers
553	Supervisors, Brickmasons, Stonemasons, Tile
554	Supervisors, Carpenters/Related Workers
555	Supervisors, Elec/Power Transm Installers
556	Superv Painters, Paperhangers/Plasters
557	Superv, Plumbers, Pipefitters, Steamfitters
558	Supervisors, Construction, NEC
563	Brickmasons and Stonemasons
564	Brickmason and Stonemason Apprentices
565	Tile Setters, Hard and Soft
566	Carpet Installers
567	Carpenters
569	Carpenter Apprentices
573	Drywall Installers
575	Electricians
576	Electrician Apprentices
577	Electrical Power Installers/Repairers
579	Painters, Construction and Maintenance
583	Paperhangers

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<b><u>CENSUS CODE</u></b>	<b><u>JOB TITLE</u></b>
584	Plasterers
585	Plumbers, Pipefitters, and Steamfitters
587	Plumber, Pipefitter, Steamfitter Apprent
588	Concrete and Terrazzo Finishers
589	Glaziers
593	Insulation Workers
594	Paving, Surfacing, Tamping Equip Operator
595	Roofers
596	Sheetmetal Duct Installers
597	Structural Metal Workers
598	Drillers, Earth
599	Construction Trades, NEC
613	Supervisors, Extractive Occupations
614	Drillers, Oil Well
615	Explosives Workers
616	Mining Machine Operators
617	Mining Occupations, NEC
628	Supervisors, Production Occupations
634	Tool and Die Makers
635	Tool and Die Maker Apprentices
636	Precision Assemblers, Metal
637	Machinists
639	Machinists Apprentices
643	Boilermakers
644	Precision Grinders, Fitters, Tool Sharpen
645	Patternmakers and Model Makers, Metal
646	Lay-Out Workers
647	Precious Stones/Metals Workers-Jewelers
649	Engravers, Metal
653	Sheet Metal Workers
654	Sheet Metal Worker Apprentices
655	Miscellaneous Precision Metal Workers
656	Patternmakers and Model Makers, Wood
657	Cabinet Makers and Bench Carpenters
658	Furniture and Wood Finishers
659	Miscellaneous Precision Woodworkers
666	Dressmakers
667	Tailors
668	Upholsterers
669	Shoe Repairers
674	Misc Precision Apparel/Fabric Workers
675	Hand Molders and Shapers, Exc Jewelers
676	Patternmakers, Lay-Out Workers, Cutters
677	Optical Goods Workers

<b><u>CENSUS CODE</u></b>	<b><u>JOB TITLE</u></b>
678	Dental Lab/Medical Appliance Technicians
679	Bookbinders
683	Elec/Electronic Equipment Assemblers
684	Miscellaneous Precision Workers, NEC
686	Butchers and Meat Cutters
687	Bakers
688	Food Batchmakers
689	Inspectors, Testers, and Graders
693	Adjusters and Calibrators
694	Water/Sewage Treatment Plant Operators
695	Power Plant Operators
696	Stationary Engineers
699	Miscellaneous Plant and System Operators
703	Lathe/Turning Machine Set-Up Operators
704	Lathe and Turning Machine Operators
705	Milling and Planing Machine Operators
706	Punching/Stamping Press Machine Oper
707	Rolling Machine Operators
708	Drilling and Boring Machine Operators
709	Grinding, Abrading, Buffing Mach Op
713	Forging Machine Operators
714	Numerical Control Machine Operators
715	Misc Metal, Plastic, Stone, Glass Mach Op
717	Fabricating Machine Operators, NEC
719	Molding and Casting Machine Operators
723	Metal Plating Machine Operators
724	Heat Treating Equipment Operators
725	Misc Metal/Plastic Processing Mach Op
726	Wood Lathe, Routing, Planing Machine Oper
727	Sawing Machine Operators
728	Shaping and Joining Machine Operators
729	Nailing and Tacking Machine Operators
733	Miscellaneous Woodworking Machine Oper
734	Printing Press Operators
735	Photoengravers and Lithographers
736	Typesetters and Compositors
737	Miscellaneous Printing Machine Oper
738	Winding and Twisting Machine Operators
739	Knitting, Looping, Taping, Weaving Mach Op
743	Textile Cutting Machine Operators
744	Textile Sewing Machine Operators
745	Shoe Machine Operators
747	Pressing Machine Operators
748	Laundering and Dry Cleaning Machine Oper

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<b><u>CENSUS CODE</u></b>	<b><u>JOB TITLE</u></b>
749	Miscellaneous Textile Machine Operators
753	Cementing and Gluing Machine Operators
754	Packaging and Filling Machine Operators
755	Extruding and Forming Machine Operators
756	Mixing and Blending Machine Operators
757	Separating, Filtering, Clarifying Mach Op
758	Compressing/Compacting Machine Operators
759	Painting/Paint Spraying Machine Oper
763	Roasting/Baking Machine Operators, Food
764	Washing/Cleaning/Pickling Machine Oper
765	Folding Machine Operators
766	Furnace/Kiln/Oven Operators, Exc Food
768	Crushing and Grinding Machine Operators
769	Slicing and Cutting Machine Operators
773	Motion Picture Projectionists
774	Photographic Process Machine Operators
777	Miscellaneous Machine Operators, NEC
779	Machine Operators, Not Specified
783	Welders and Cutters
784	Solderers and Brazers
785	Assemblers
786	Hand Cutting and Trimming Occupations
787	Hand Molding, Casting, and Forming Occup
789	Hand Printing, Coating, Decorating Occup
793	Hand Engraving and Printing Occupations
795	Miscellaneous Hand Working Occupations
796	Production Insp, Checkers, and Examiners
797	Production Testers
798	Production Samplers and Weighers
799	Graders and Sorters, Exc Agricultural
803	Supervisors, Motor Vehicle Operators
804	Truck Drivers
806	Driver-Sales Workers
808	Bus Drivers
809	Taxicab Drivers and Chauffeurs
813	Parking Lot Attendants
814	Motor Transportation Occupations, NEC
823	Railroad Conductors and Yardmasters
824	Locomotive Operating Occupations
825	Railroad Brake, Signal, and Switch Oper
826	Rail Vehicle Operators, NEC
828	Ship Captains/Mates, Except Fishing Boats
829	Sailors and Deckhands
833	Marine Engineers



<u>CENSUS CODE</u>	<u>JOB TITLE</u>
834	Bridge, Lock and Lighthouse Tenders
843	Supervisors, Material Moving Equip Oper
844	Operating Engineers
845	Longshore Equipment Operators
848	Hoist and Winch Operators
849	Crane and Tower Operators
853	Excavating and Loading Machine Operators
855	Grader, Dozer, and Scraper Operators
856	Industrial Truck/Tractor Equipment Oper
859	Miscellaneous Material Moving Equip Oper
864	Superv, Handlers, Equip Cleaners/Laborers
865	Helpers, Mechanics and Repairers
866	Helpers, Construction Traders
867	Helpers, Surveyors
868	Helpers, Extractive Occupations
869	Construction Laborers
874	Production Helpers
875	Garbage Collectors
876	Stevedores
877	Stock Handlers and Baggers
878	Machine Feeders and Offbearers
883	Freight/Stock/ Material Handlers, NEC
885	Garage/Service Station Related Occup
887	Vehicle Washers and Equipment Cleaners
888	Hand Packers and Packagers
889	Laborers, Except Construction

Example of Usage Within VALE:

'Census Code > 389'                      selects from only those jobs in Census Code categories 403 through 889. Note that this produces the same result as 'Group > 2' (refer to the definition of 'Census Group').

### **Census Group**

The Census Group number of a job represents the broad occupational category under which the job is classified. The one-page VALE summary provided with all VALE reports lists job selections by these six broad occupational categories (groups):

<b>GROUP NUMBER</b>	<b>OCCUPATIONAL CATEGORY</b>
1	Managerial and Professional Specialty Occupations (contains Census Code Numbers (CCNs) 3 through 199)
2	Technical, Sales, and Administrative Support Occupations (contains CCNs 203 through 389)
3	Service Occupations (contains CCNs 403 through 469)
4	Farming, Forestry, and Fishing Occupations (contains CCNs 473 through 499)
5	Precision Production, Craft, and Repair Occupations (contains CCNs 503 through 699)
6	Operators, Fabricators, and Laborers (contains CCNs 703 through 889)

Examples of Usage Within VALE:

'Census Group = 4'	selects only those jobs in group 4.
'Census Group > 4'	selects only those jobs in groups 5 through 6.
'Census Group >= 4'	selects only those jobs in groups 4 through 6.

### **DOT Code**

Using this characteristic, you may specify a range of DOT job numbers to include or omit in a given report. You will rarely make selections using this variable. Instead, the 'Census Group' or 'Census Code' characteristics (explained in the preceding sections) may be easier to use and usually yield the same result.

Example of Usage Within VALE:

'DOT Code Between 250.157-010 and 299.687-014'	selects jobs from DOT number 250.157-010 (Superintendent, Sales) through DOT number 299.687-014 (Sandwich-Board Carrier). Note that this range includes all sales occupations.
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### **Data, People, Things**

The middle three digits of the DOT occupational code are the worker functions ratings of the tasks performed in the occupation. Every job requires a worker to function to some degree in relation to data, people, and things. A separate digit expresses the worker's relationship to each of these three groups.

Worker functions involving more complex responsibility and judgment are assigned lower numbers in these three lists while functions which are less complicated have higher numbers. For example, "synthesizing" and "coordinating" data are more complex tasks than "copying" data; "instructing" people involves a broader responsibility than "taking instructions-helping"; and "operating" things is a more complicated task than "handling" things.

<u>DATA</u>	<u>PEOPLE</u>	<u>THINGS</u>
0 Synthesizing	0 Mentoring	0 Setting Up
1 Coordinating	1 Negotiating	1 Precision Working
2 Analyzing	2 Instructing	2 Operating-Controlling
3 Compiling	3 Supervising	3 Driving-Operating
4 Computing	4 Diverting	4 Manipulating
5 Copying	5 Persuading	5 Tending
6 Comparing	6 Speaking-Signaling	6 Feeding-Offbearing
	7 Serving	7 Handling
	8 Taking Instructions - Helping	

Examples of Usage Within VALE:

- 'Data = 3' selects jobs that require data compilation.
- 'People < 5' selects jobs that require interaction with people, from taking instructions or helping to speaking or signaling.
- 'Things <= 4' selects jobs that require interaction with things, from handling to manipulating.

### Value Levels for Environmental Conditions and Physical Demands

Analysts use the following symbols to indicate the absence or presence (and when present, the frequency of occurrence) of the Environmental Conditions and Physical Demands (except strength).

<u>CODE</u>	<u>FREQUENCY</u>	<u>DEFINITION</u>
1	Not Present	Activity or condition does not exist.
2	Occasionally	Activity or condition exists up to 1/3 of the time.
3	Frequently	Activity or condition exists from 1/3 to 2/3 of the time.
4	Constantly	Activity or condition exists 2/3 or more of the time.

## Environmental Conditions

Environmental conditions are the physical surroundings of a worker in a specific job. Following is a list of the variables used by VALE.

<b>ENVIRONMENTAL CONDITIONS (VALE CHARACTERISTIC)</b>	<b>WHAT IT MEANS</b>												
Exposure to Weather	Exposure to outside atmospheric conditions.												
Extreme Cold	Exposure to non weather-related cold temperatures.												
Extreme Heat	Exposure to non weather-related hot temperatures.												
Wet and/or Humid	Contact with water or other liquids or exposure to non weather-related humid conditions.												
Noise Intensity Level	<p>The noise intensity level to which the worker is exposed in the job environment. This factor is expressed by one of five levels. Consider all the benchmarks within a level as providing an insight into the nature of the specific levels.</p> <table border="0"> <thead> <tr> <th><b>Level</b></th> <th><b>Illustrative Examples</b></th> </tr> </thead> <tbody> <tr> <td>Very Quiet</td> <td>isolation booth for hearing test; deep sea diving; forest trail</td> </tr> <tr> <td>Quiet</td> <td>library, many private offices; funeral reception, golf course, art museum</td> </tr> <tr> <td>Moderate</td> <td>business office where typewriters are used; department store; grocery store; light traffic; fast food restaurant at off-hours</td> </tr> <tr> <td>Loud</td> <td>can manufacturing department; large earth-moving equipment, heavy traffic</td> </tr> <tr> <td>Very Loud</td> <td>rock concert - front row; jackhammer work, rocket engine testing area during test</td> </tr> </tbody> </table>	<b>Level</b>	<b>Illustrative Examples</b>	Very Quiet	isolation booth for hearing test; deep sea diving; forest trail	Quiet	library, many private offices; funeral reception, golf course, art museum	Moderate	business office where typewriters are used; department store; grocery store; light traffic; fast food restaurant at off-hours	Loud	can manufacturing department; large earth-moving equipment, heavy traffic	Very Loud	rock concert - front row; jackhammer work, rocket engine testing area during test
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Very Loud	rock concert - front row; jackhammer work, rocket engine testing area during test												
Vibration	Exposure to shaking object or surface.												
Atmospheric Conditions	Exposure to conditions such as fumes, noxious odors, dusts, mists, gases, and poor ventilation, that affect the respiratory system, eyes, or the skin.												
Proximity to Moving Mechanical Parts	Exposure to possible bodily injuries from moving mechanical parts of equipment, tools, or machinery.												
Exposure to Electrical Shock	Exposure to possible bodily injury from electrical shock.												
Working in High Exposed Places	Exposure to possible bodily injury from falling.												
Exposure to Radiation	Exposure to possible bodily injury from radiation.												

<b>ENVIRONMENTAL CONDITIONS (VALE CHARACTERISTIC)</b>	<b><u>WHAT IT MEANS</u></b>
Working with Explosives	Exposure to possible injury from explosions.
Exposure to Toxic or Caustic Chemicals	Exposure to possible bodily injury from toxic or caustic chemicals.
Other Environmental Condition	

Examples of Usage Within VALE:

- 'Exposure to Weather = 2 - Occasional      selects jobs where the exposure to weather is on an occasional basis.
- 'Exposure to Weather < 3 - Frequently      selects jobs where the exposure to weather is not present or is on an occasional basis.

### Physical Demands

The physical demands used with VALE serve as a means of expressing both the physical requirements of the job and the physical capacities (specific physical traits) a worker must have to meet those required by many jobs, and also the name of a specific capacity possessed by many people. The worker must possess physical capacities at least in an amount equal to the physical demands made by the job.

<b>PHYSICAL DEMAND (VALE CHARACTERISTIC)</b>	<b><u>WHAT IT MEANS</u></b>
Climbing	Ascending or descending ladders, stairs, scaffolding, ramps, poles, and the like, using feet and legs or hands and arms. Body agility is emphasized.
Balancing	Maintaining body equilibrium to prevent falling when walking, standing, crouching, or running on narrow, slippery, or erratically moving surfaces; or maintaining body equilibrium when performing gymnastic feats.
Stooping	Bending body downward and forward by bending spine at the waist, requiring full use of the lower extremities and back muscles.
Kneeling	Bending legs at knees to come to rest on knee or knees.
Crouching	Bending body downward and forward by bending legs and spine.
Crawling	Moving about on hands and knees or hands and feet.

<b><u>PHYSICAL DEMAND (VALE CHARACTERISTIC)</u></b>	<b><u>WHAT IT MEANS</u></b>
Reaching	Extending hand(s) and arm(s) in any direction.
Handling	Seizing, holding, grasping, turning, or otherwise working with hand or hands. Fingers are involved only to the extent that they are an extension of the hand, such as to run a switch or shift automobile gears.
Fingering	Picking, pinching, or otherwise working primarily with fingers rather than with the whole hand or arm as in handling.
Feeling	Perceiving attributes of objects, such as size, shape, temperature, or texture, by touching with skin, particularly that of fingertips.
Talking	Expressing or exchanging ideas by means of the spoken word to impart oral information to clients or to the public and to convey detailed spoken instructions to other workers accurately, loudly, or quickly.
Hearing	Perceiving the nature of sounds by ear.
Tasting/Smelling	Distinguishing, with a degree of accuracy, differences or similarities in intensity or quality of flavors or odors, or recognizing particular flavors or odors, using tongue or nose.
Near Acuity	Clarity of vision at 20 inches or less.
Far Acuity	Clarity of vision at 20 feet or more.
Depth Perception	Three-dimensional vision. Ability to judge distances and spatial relationships so as to see objects where and as they actually are.
Accommodation	Adjustment of lens of eye to bring an object into sharp focus. This factor is required when doing near point work at varying distances from the eye.
Color Vision	Ability to identify and distinguish colors.
Field of Vision	Observing an area that can be seen up and down or to right and left while eyes are fixed on a given point.

The strength factor is expressed in terms of *Sedentary*, *Light*, *Medium*, *Heavy*, and *Very Heavy*. It is measured by involvement of the worker with one or more of the following activities:

- a. Worker position(s):
  - 1) Standing: Remaining on one's feet in an upright position at a workstation without moving about.
  - 2) Walking: Moving about on foot.

- 3) Sitting: Remaining in the normal seated position.
- b. Worker movement of objects (including extremities used):
  - 1) Lifting: Raising or lowering an object from one level to another (includes upward pulling).
  - 2) Carrying: Transporting an object, usually holding it in the hands or arms or on the shoulder.
  - 3) Pushing: Exerting force upon an object so that the object moves away from the force (includes slapping, striking, kicking, and treadle actions).
  - 4) Pulling: Exerting force upon an object so that the object moves toward the force (includes jerking).

**Five Degrees of Strength**

<u>STRENGTH LEVEL</u>	<u>WHAT IT MEANS</u>
Sedentary	Sedentary work involves exerting up to 10 pounds of force occasionally or a negligible amount of force frequently to lift, carry, push, pull, or otherwise move objects, including the human body. Sedentary work involves sitting most of the time, but may involve walking or standing for brief periods of time. Jobs may be defined as Sedentary when walking and standing are required only occasionally and all other Sedentary criteria are met.
Light	Light work involves exerting up to 20 pounds of force occasionally, or up to 10 pounds of force frequently, or a negligible amount of force constantly to move objects. Physical demand requirements are in excess of those for Sedentary work. Even though the weight lifted may be only a negligible amount, a job/occupation is rated Light work when it requires: (1) walking or standing to a significant degree; (2) sitting most of the time while pushing or pulling arm or leg controls; or (3) working at a production rate pace while constantly pushing or pulling materials even though the weight of the materials is negligible. (The constant stress and strain of maintaining a production rate pace, especially in an industrial setting, can be and is physically demanding of a worker even though the amount of force exerted is negligible.)
Medium	Medium work involves exerting 20 to 50 pounds of force occasionally, or 10 to 25 pounds of force frequently, or an amount greater than negligible and up to 10 pounds constantly to move objects. Physical demand requirements are in excess of those for Light work.

<u>STRENGTH LEVEL</u>	<u>WHAT IT MEANS</u>
Heavy	Heavy work involves exerting 50 to 100 pounds of force occasionally, or 25 to 50 pounds of force frequently, or 10 to 20 pounds of force constantly to move objects. Physical demand requirements are in excess of those for Medium work.
Very Heavy	Very Heavy work involves exerting in excess of 100 pounds of force occasionally, or in excess of 50 pounds of force frequently, or in excess of 20 pounds of force constantly to move objects. Physical demand requirements are in excess of those for Heavy work.

### Limits of Weights Lifted/Carried or Force Exerted

<u>RATING</u>	<u>OCCASIONALLY</u>	<u>FREQUENTLY</u>	<u>CONSTANTLY</u>
Sedentary	*-10	*	N/A
Light	*-20	*-10	*
Medium	20-50	10-25	*-10
Heavy	50-100	25-50	10-20
Very Heavy	100+	50+	20+

\* = negligible weight; N/A - Not Applicable

In the preceding chart, lifting, pushing, and pulling are expressed in terms of both intensity and duration. Judgments regarding intensity involve consideration of the weight handled, position of the worker's body or the part of the worker's body used in handling weights, and the aid given by helpers or by mechanical equipment. Duration is the total time spent by the worker in carrying out these activities. Carrying most often is expressed in terms of duration, weight carried, and distance carried. This information is summarized in the table below.

The range excludes the lower number and includes the higher number, i.e., the range 10-25 excludes 10 (begins at 10+) and includes 25. Overlapping ranges of \*-10 in the Occasionally column for Sedentary work and Light work occupations are differentiated on the basis of the worker's posture and the rate at which work is performed. For example, all Sedentary occupations involve sitting constantly. However, in some occupations workers sit constantly but exert force of an amount or at a frequency rate that exceeds those for Sedentary work. Such occupations are, therefore, rated at least for Light work.

Examples of Usage Within VALE:

'Strength = 3 - Medium'

selects jobs that require the physical demands of medium work only (this does *not* select jobs that require sedentary and light work).



'Strength $\langle \rangle$ 5 - Very Heavy'	selects jobs that require sedentary, light, medium, and heavy work (' $\langle \rangle$ ' is the same as 'not equal to').
'Strength $\leq$ 2 - Light'	selects jobs that require either sedentary or light work.
'Climbing = 2 - Occasionally'	selects jobs that require climbing on an occasional basis.
'Balancing $\leq$ 3 - Frequently'	selects jobs that do not require balancing or require it on an occasional or frequent basis.

## Reasoning, Math, Language

Reasoning, Math, and Language represent General Educational Development (GED) levels. GED embraces those aspects of education (formal and informal) which contribute to the worker's (a) reasoning development and ability to follow instructions, and (b) acquisition of "tool" knowledges such as language and mathematical skills. This is education of a general nature which does not have a recognized, fairly specific occupational objective. Ordinarily, such education is obtained in elementary school, high school, or college. However, it derives also from experience and self-study.

As noted above, GED involves three types of skill: reasoning (R), mathematics (M), and language (L). Each skill is further defined in terms of six levels, as outlined on the following page.

Examples of Usage Within VALE:

'Reasoning = 3'	selects only jobs that require a reasoning level of 3.
'Math $<$ 3'	selects only jobs that require math levels of 1 or 2.
'Language $\leq$ 3'	selects only jobs that require language levels 1, 2, or 3.

<b><u>LEVEL</u></b>	<b><u>REASONING DEVELOPMENT</u></b>	<b><u>MATHEMATICAL DEVELOPMENT</u></b>	<b><u>LANGUAGE DEVELOPMENT</u></b>
6	Apply principles of logical or scientific thinking to a wide range of intellectual and practical problems. Deal with nonverbal symbolism (formulas, scientific equations, graphs, musical notes, etc.) in its most difficult phases. Deal with a variety of abstract and concrete variables. Apprehend the most abstruse classes of concepts.	Advanced Calculus: Work with limits, continuity, real number systems, mean value theorems, and implicit function theorems. Modern Algebra: Apply fundamental concepts of theories of groups, rings, and fields. Work with differential equations, linear algebra, infinite series, advanced operations methods, and functions of real and complex variables. Statistics: Work with mathematical statistics, mathematical probability and applications, experimental design, statistical inference, and econometrics.	Same as Level 5
5	Apply principles of logical or scientific thinking to define problems, collect data, establish facts, and draw valid conclusions. Interpret an extensive variety of technical instructions in mathematical or diagrammatic form. Deal with several abstract and concrete variables.	Algebra: Work with exponents and logarithms, linear equations, quadratic equations, mathematical induction and binomial theorem, and permutations. Calculus: Apply concepts of analytic geometry, differentiations, and integration of algebraic functions with applications. Statistics: Apply mathematical operations to frequency distributions, reliability and validity of tests, normal curve, analysis of variance, correlation techniques, chi-square application and sampling theory, and factor analysis.	Reading: Read literature, book and play reviews, scientific and technical journals, abstracts, financial reports, and legal documents. Writing: Write novels, plays, editorials, journals, speeches, manuals, critiques, poetry, and songs. Speaking: Conversant in the theory, principles, and methods of effective and persuasive speaking, voice and diction, phonetics, and discussion and debate.

<b><u>LEVEL</u></b>	<b><u>REASONING DEVELOPMENT</u></b>	<b><u>MATHEMATICAL DEVELOPMENT</u></b>	<b><u>LANGUAGE DEVELOPMENT</u></b>
4	<p>Apply principles of rational systems to solve practical problems and deal with a variety of concrete variables in situation where only limited standardization exists. Interpret a variety of instructions furnished in written, oral, diagrammatic, or schedule form. (Examples of rational systems include: bookkeeping, internal combustion engines, electric wiring systems, house building, farm management, and navigation)</p>	<p>Algebra: Deal with system of real numbers, linear, quadratic, rational, exponential, logarithmic, angle and circular functions, and inverse functions; related algebraic solution of equations and inequalities; limits and continuity; and probability and statistical inference.</p> <p>Geometry: Deductive axiomatic geometry, plane and solid, and rectangular coordinates.</p> <p>Shop Math: Practical application of fractions, percentages, ratio and proportion, measurement, logarithms, practical algebra, geometric construction, and essentials of trigonometry.</p>	<p>Reading: Read novels, poems, newspapers, periodicals, journals, manuals, dictionaries, thesauruses, and encyclopedias.</p> <p>Writing: Prepare business letters, expositions, summaries, and reports, using prescribed format and conforming to all rules of punctuation, grammar, diction, and style.</p> <p>Speaking: Participate in panel discussions, dramatizations, and debates. Speak extemporaneously on a variety of subjects.</p>
3	<p>Apply commonsense understanding to carry out instructions furnished in written, oral, or diagrammatic form. Deal with problems involving several concrete variables in or from standardized situations.</p>	<p>Compute discount, interest, profit, and loss; commission, markup, and selling price; ratio and proportion; and percentage. Calculate surfaces, volumes, weights, and measures.</p> <p>Algebra: Calculate variables and formulas; monomials and polynomials; ratio and proportion variables; and square roots and radicals.</p> <p>Geometry: Calculate plane and solid figures, circumference, area, and volume. Understand kinds of angles and properties of pairs of angles.</p>	<p>Reading: Read a variety of novels, magazines, atlases, and encyclopedias. Read safety rules, instructions in the use and maintenance of shop tools and equipment, and methods and procedures in mechanical drawing and layout work.</p> <p>Writing: Write reports and essays with proper format, punctuation, spelling, and grammar, using all parts of speech.</p> <p>Speaking: Speak before an audience with poise, voice control, and confidence, using correct English and well-modulated voice.</p>

<b><u>LEVEL</u></b>	<b><u>REASONING DEVELOPMENT</u></b>	<b><u>MATHEMATICAL DEVELOPMENT</u></b>	<b><u>LANGUAGE DEVELOPMENT</u></b>
2	Apply commonsense understanding to carry out detailed but uninvolved written or oral instructions. Deal with problems involving a few concrete variables in or from standardized situations.	Add, subtract, multiply, and divide all units of measure. Perform the four operations with like common and decimal fractions. Compute ratio, rate, and percent. Draw and interpret bar graphs. Perform arithmetic operation involving all American monetary units.	<p>Reading:</p> <p>Passive vocabulary of 5,000-6,000 words. Read at rate of 190-215 words per minute. Read adventure stories and comic books, looking up unfamiliar words in dictionary for meaning, spelling, and pronunciation. Read instructions for assembling model cars and airplanes.</p> <p>Writing:</p> <p>Write compound and complex sentences, using cursive style, proper end punctuation, and employing adjectives and adverbs.</p> <p>Speaking:</p> <p>Speak clearly and distinctly with appropriate pauses and emphasis, correct pronunciation, variations in word order, using present perfect, and future tenses.</p>
1	Apply commonsense understanding to carry out simple one- or two-step instructions. Deal with standardized situations with occasional or no variables in or from these situations encountered on the job.	Add and subtract two-digit numbers. Multiply and divide 10's and 100's by 2, 3, 4, 5. Perform the four basic arithmetic operations with coins as part of a dollar. Perform operations with units such as cup, pint, and quart; inch, foot, and yard; and ounce and pound.	<p>Reading:</p> <p>Recognize meaning of 2,500 (two- or three-syllable) words. Read at rate of 95-120 words per minute. Compare similarities and differences between words and between series of numbers.</p> <p>Writing:</p> <p>Print simple sentences containing subject, verb, and object, and series of numbers, names, and addresses.</p> <p>Speaking:</p> <p>Speak simple sentences, using normal word order, and present and past tenses.</p>

## SVP (Specific Vocational Preparation)

The SVP represents the amount of time required to learn the techniques, acquire information, and develop the facility needed for average performance in a specific job-worker situation. The training may be acquired in a school, work, military, vocational, or an institutional environment. It does not include orientation training required of every fully qualified worker to become accustomed to the special conditions of any new job. Specific vocational training includes training given in any of the following circumstances:

- a. Vocational education (such as high school commercial or shop training, technical school, art school, and that part of college training which is organized around a specific vocational objective);
- b. Apprenticeship training (for apprenticeable jobs only);
- c. In-plant training (given by an employer in the form of organized classroom study);
- d. On-the-job training (serving as a learner or trainee on the job under the instruction of a qualified worker);
- e. Essential experience in other jobs (serving in less responsible jobs which lead to the higher grade job or serving in other jobs that qualify).

Below is an explanation of the various levels of Specific Vocational Preparation.

<u>LEVEL</u>	<u>TIME</u>
1	Short demonstration
2	Anything beyond short demonstration up to and including 30 days.
3	Over 30 days up to and including 3 months.
4	Over 3 months up to and including 6 months.
5	Over 6 months up to and including 1 year.
6	Over 1 year up to and including 2 years.
7	Over 2 years up to and including 4 years.
8	Over 4 years up to and including 10 years.
9	Over 10 years.

Examples of Usage Within VALE:

'SVP = 3'	selects only jobs that require SVP at level 3.
'SVP < 3'	selects jobs that require SVP at levels 1 or 2.
'SVP <= 3'	selects jobs that require SVP at levels 1, 2, or 3.
'SVP Between 3 and 6'	selects jobs that require SVP at levels 3, 4, 5, or 6.

## Specific Worker Characteristic Details

See *The Revised Handbook for Analyzing Jobs* (1991). U.S. Department of Labor, Employment and Training Administration. ISBN: 1-56370-051-4.

## Logical Operators

Below is a list of the Logical Operators available for use when selecting Worker Characteristics in the VALE program. The operators provide a means of selecting the specific Characteristic Value you wish to use for the Worker Characteristic you have chosen.

<u>LOGICAL OPERATORS</u>	<u>WHAT IT MEANS</u>
=	Is Equal To
>	Is Greater Than
<	Is Less Than
>=	Is Greater Than or Equal To
<=	Is Less Than or Equal To
Between	Is Between Two Values (note that this includes the endpoints of the range you select)
<>	Is Not Equal To