

§ 220.187

review the annuitant's continuing eligibility. Regardless of the annuitant's classification, the Board will conduct an immediate continuing disability review if a question of continuing disability is raised pursuant to paragraph (b) of this section.

(e) *Change in classification of impairment.* If the evidence developed during a continuing disability review demonstrates that the annuitant's impairment has improved, is expected to improve, or has worsened since the last review, the Board may reclassify the annuitant's impairment to reflect this change in severity. A change in the classification of the annuitant's impairment will change the frequency with which the Board will review the case. The Board may also reclassify certain impairments because of improved tests, treatment, and other technical advances concerning those impairments.

(f) *Review after administrative appeal.* If the annuitant was found eligible to receive or to continue to receive disability benefits on the basis of a decision by a hearings officer, the three-member Board or a Federal court, the agency will not conduct a continuing disability review earlier than 3 years after that decision unless the annuitant's case should be scheduled for a medical improvement expected or vocational reexamination diary review or a question of continuing disability is raised pursuant to paragraph (b) of this section.

(g) *Waiver of timeframes.* All cases involving a nonpermanent impairment will be reviewed by the Board at least once every 3 years unless the Board determines that the requirements should be waived to ensure that only the appropriate number of cases are reviewed. The appropriate number of cases to be reviewed is to be based on such considerations as the backlog of pending reviews, the projected number of new applications, and projected staffing levels. Therefore, an annuitant's continuing disability review may be delayed longer than 3 years following the Board's original decision or other review under certain circumstances. Such a delay would be based on the Board's need to ensure that backlogs, and new disability claims workloads

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are accomplished within available medical and other resources and that such reviews are done carefully and accurately.

[56 FR 12980, Mar. 28, 1991, as amended at 65 FR 20372, Apr. 17, 2000]

§ 220.187 If the annuitant's medical recovery was expected and the annuitant returned to work.

If the annuitant's impairment was expected to improve and the annuitant returned to full-time work with no significant medical limitations and acknowledges that medical improvement has occurred, the Board may find that the annuitant's disability ended in the month he or she returned to work. Unless there is evidence showing that the annuitant's disability has not ended, the Board will use the medical and other evidence already in the annuitant's file and the fact that he or she has returned to full-time work without significant limitations to determine that the annuitant is no longer disabled. (If the annuitant's impairment is not expected to improve, the Board will not ordinarily review his or her claim until the end of the trial work period, as described in § 220.170.)

Example: Evidence obtained during the processing of the annuitant's claim showed that the annuitant had an impairment that was expected to improve about 18 months after the annuitant's disability began. The Board, therefore, told the annuitant that his or her claim would be reviewed again at that time. However, before the time arrived for the annuitant's scheduled medical reexamination, the annuitant told the Board that he or she had returned to work and the annuitant's impairment had improved. The Board investigated immediately and found that, in the 16th month after the annuitant's began, the annuitant returned to full-time work without any significant medical restrictions. Therefore, the Board would find that the annuitant's disability ended in the first month the annuitant returned to full-time work.

APPENDIX 1 TO PART 220—LISTING OF IMPAIRMENTS

In the Listing of Impairments, the listings under each separate body system in both Part A and Part B will be effective for periods ranging from 4 to 8 years unless extended or revised and promulgated again. Specifically, the body system listings in the Listing of Impairments will be subject to the following termination dates:

Musculoskeletal system (1.00) within 5 years. Consequently, the listings in this body system will no longer be effective on June 6, 1992.

Respiratory system (3.00) within 6 years. Consequently, the listings in this body system will no longer be effective on December 6, 1991.

The cardiovascular system (4.00) will no longer be effective on June 6, 1991.

The listings under the other body systems in Part A and Part B will expire in 8 years. Consequently, the listing in these body systems will no longer be effective on December 6, 1993. The mental disorders listings in Part A will no longer be effective on August 28, 1991, unless extended by the Board or revised and promulgated again.

Part A

Criteria applicable to individuals age 18 and over and to children under age 18 where criteria are appropriate.
Sec.

- 1.00 Musculoskeletal System.
- 2.00 Special Senses and Speech.
- 3.00 Respiratory System.
- 4.00 Cardiovascular System.
- 5.00 Digestive System.
- 6.00 Genito-Urinary System.
- 7.00 Hemic and Lymphatic System.
- 8.00 Skin.
- 9.00 Endocrine System.
- 10.00 Multiple Body Systems.
- 11.00 Neurological.
- 12.00 Mental Disorders.
- 13.00 Neoplastic Diseases, Malignant.

1.00 MUSCULOSKELETAL SYSTEM

A. *Loss of function* may be due to amputation or deformity. Pain may be an important factor in causing functional loss, but it must be associated with relevant abnormal signs or laboratory findings. Evaluations of musculoskeletal impairments should be supported where applicable by detailed descriptions of the joints, including ranges of motion, condition of the musculature, sensory or reflex changes, circulatory deficits, and X-ray abnormalities.

B. *Disorders of the spine*, associated with vertebrogenic disorders as in 1.05C, result in impairment because of distortion of the bony and ligamentous architecture of the spine or impingement of a herniated nucleus pulposus or bulging annulus on a nerve root. Impairment caused by such abnormalities usually improves with time or responds to treatment. Appropriate abnormal physical findings must be shown to persist on repeated examinations despite therapy for a reasonable presumption to be made that severe impairment will last for a continuous period of 12 months. This may occur in cases with unsuccessful prior surgical treatment.

Evaluation of the impairment caused by disorders of the spine requires that a clinical diagnosis of the entity to be evaluated first must be established on the basis of adequate history, physical examination, and roentgenograms. The specific findings stated in 1.05C represent the level required for that impairment; these findings, by themselves, are not intended to represent the basis for establishing the clinical diagnosis. Furthermore, while neurological examination findings are required, they are not to be interpreted as a basis for evaluating the magnitude of any neurological impairment. Neurological impairments are to be evaluated under 11.00-11.19.

The history must include a detailed description of the character, location, and radiation of pain; mechanical factors which incite and relieve pain; prescribed treatment, including type, dose, and frequency of analgesic; and typical daily activities. Care must be taken to ascertain that the reported examination findings are consistent with the individual's daily activities.

There must be a detailed description of the orthopedic and neurologic examination findings. The findings should include a description of gait, limitation of movement of the spine given quantitatively in degrees from the vertical position, motor and sensory abnormalities, muscle spasm, and deep tendon reflexes. Observations of the individual during the examination should be reported; e.g., how he or she gets on and off the examining table. Inability to walk on heels or toes, to squat, or to arise from a squatting position, where appropriate, may be considered evidence of significant motor loss. However, a report of atrophy is not acceptable as evidence of significant motor loss without circumferential measurements of both thighs and lower legs (or upper or lower arms) at a stated point above and below the knee or elbow given in inches or centimeters. A specific description of atrophy of hand muscles is acceptable without measurements of atrophy but should include measurements of grip strength.

These physical examination findings must be determined on the basis of objective observations during the examination and not simply a report of the individual's allegation, e.g., he says his leg is weak, numb, etc. Alternative testing methods should be used to verify the objectivity of the abnormal findings, e.g., a seated straight-leg raising test in addition to a supine straight-leg raising test. Since abnormal findings may be intermittent, their continuous presence over a period of time must be established by a record of ongoing treatment. Neurological abnormalities may not completely subside after surgical or nonsurgical treatment, or with the passage of time. Residual neurological abnormalities, which persist after it has been determined clinically or by direct

surgical or other observation that the ongoing or progressive condition is no longer present, cannot be considered to satisfy the required findings in 1.05C.

Where surgical procedures have been performed, documentation should include a copy of the operative note and available pathology reports.

Electrodiagnostic procedures and myelography may be useful in establishing the clinical diagnosis, but do not constitute alternative criteria to the requirements in 1.05C.

C. *After maximum benefit from surgical therapy* has been achieved in situations involving fractures of an upper extremity (see 1.12) or soft tissue injuries of a lower or upper extremity (see 1.13), i.e., there have been no significant changes in physical findings or X-ray findings for any 6-month period after the last definitive surgical procedure, evaluation should be made on the basis of demonstrable residuals.

D. *Major joints* as used herein refer to hip, knee, ankle, shoulder, elbow, or wrist and hand. (Wrist and hand are considered together as one major joint.)

E. *The measurements of joint motion* are based on the techniques described in the "Joint Motion Method of Measuring and Recording," published by the American Academy of Orthopedic Surgeons in 1965, or the "Guides to the Evaluation of Permanent Impairment—The Extremities and Back" (Chapter I); American Medical Association, 1971.

1.01 Category of Impairments, Musculoskeletal

1.02 *Active rheumatoid arthritis and other inflammatory arthritis.*

With both A and B.

A. History of persistent joint pain, swelling, and tenderness involving multiple major joints (see 1.00D) and with signs of joint inflammation (swelling and tenderness) on current physical examination despite prescribed therapy for at least 3 months, resulting in significant restriction of function of the affected joints, and clinical activity expected to last at least 12 months; and

B. Corroboration of diagnosis at some point in time by either.

1. Positive serologic test for rheumatoid factor; or

2. Antinuclear antibodies; or

3. Elevated sedimentation rate; or

4. Characteristic histologic changes in biopsy of synovial membrane or subcutaneous nodule (obtained independent of Social Security disability evaluation).

1.03 *Arthritis of a major weight-bearing joint (due to any cause):*

With history of persistent joint pain and stiffness with signs of marked limitation of motion or abnormal motion of the affected joint on current physical examination. With:

A. Gross anatomical deformity of hip or knee (e.g., subluxation, contracture, bony or fibrous ankylosis, instability) supported by X-ray evidence of either significant joint space narrowing or significant bony destruction and markedly limiting ability to walk and stand; or

B. Reconstructive surgery or surgical arthrodesis of a major weight-bearing joint and return to full weight-bearing status did not occur, or is not expected to occur, within 12 months of onset.

1.04 *Arthritis of one major joint in each of the upper extremities (due to any cause):*

With history of persistent joint pain and stiffness, signs of marked limitation of motion of the affected joints on current physical examination, and X-ray evidence of either significant joint space narrowing or significant bony destruction. With:

A. Abduction and forward flexion (elevation) of both arms at the shoulders, including scapular motion, restricted to less than 90 degrees; or

B. Gross anatomical deformity (e.g., subluxation, contracture, bony or fibrous ankylosis, instability, ulnar deviation) and enlargement or effusion of the affected joints.

1.05 *Disorders of the spine:*

A. Arthritis manifested by ankylosis or fixation of the cervical or dorsolumbar spine at 30½ or more of flexion measured from the neutral position, with X-ray evidence of:

1. Calcification of the anterior and lateral ligaments; or

2. Bilateral ankylosis of the sacroiliac joints with abnormal apophyseal articulations; or

B. Osteoporosis, generalized (established by X-ray) manifested by pain and limitation of back motion and paravertebral muscle spasm with X-ray evidence of either:

1. Compression fracture of a vertebral body with loss of at least 50 percent of the estimated height of the vertebral body prior to the compression fracture, with no intervening direct traumatic episode; or

2. Multiple fractures of vertebrae with no intervening direct traumatic episode; or

C. Other vertebrogenic disorders (e.g., herniated nucleus pulposus, spinal stenosis) with the following persisting for at least 3 months despite prescribed therapy and expected to last 12 months. With both 1 and 2:

1. Pain, muscle spasm, and significant limitation of motion in the spine; and

2. Appropriate radicular distribution of significant motor loss with muscle weakness and sensory and reflex loss.

1.08 *Osteomyelitis or septic arthritis (established by X-ray):*

A. Located in the pelvis, vertebra, femur, tibia, or a major joint of an upper or lower extremity, with persistent activity or occurrence of at least two episodes of acute activity within a 5-month period prior to adjudication, manifested by local inflammatory,

and systemic signs and laboratory findings (e.g., heat, redness, swelling, leucocytosis, or increased sedimentation rate) and expected to last at least 12 months despite prescribed therapy; or

B. Multiple localizations and systemic manifestations as in A above.

1.09 *Amputation or anatomical deformity of (i.e., loss of major function due to degenerative changes associated with vascular or neurological deficits, traumatic loss of muscle mass or tendons and X-ray evidence of bony ankylosis at an unfavorable angle, joint subluxation or instability):*

A. Both hands; or

B. Both feet; or

C. One hand and one foot.

1.10 *Amputation of one lower extremity (at or above the tarsal region):*

A. Hemipelvectomy or hip disarticulation; or

B. Amputation at or above the tarsal region due to peripheral vascular disease or diabetes mellitus; or

C. Inability to use a prosthesis effectively, without obligatory assistive devices, due to one of the following:

1. Vascular disease; or

2. Neurological complications (e.g., loss of position sense); or

3. Stump too short or stump complications persistent, or are expected to persist, for at least 12 months from onset; or

4. Disorder of contralateral lower extremity which markedly limits ability to walk and stand.

1.11 *Fracture of the femur, tibia, tarsal bone of pelvis* with solid union not evident on X-ray and not clinically solid, when such determination is feasible, and return to full weight-bearing status did not occur or is not expected to occur within 12 months of onset.

1.12 *Fractures of an upper extremity* with non-union of a fracture of the shaft of the humerus, radius, or ulna under continuing surgical management directed toward restoration of functional use of the extremity and such function was not restored or expected to be restored within 12 months after onset.

1.13 *Soft tissue injuries of an upper or lower extremity* requiring a series of staged surgical procedures within 12 months after onset for salvage and/or restoration of major function of the extremity, and such major function was not restored or expected to be restored within 12 months after onset.

2.00 SPECIAL SENSES AND SPEECH

A. Ophthalmology

1. *Causes of impairment.* Diseases or injury of the eyes may produce loss of central or peripheral vision. Loss of central vision results in inability to distinguish detail and prevents reading and fine work. Loss of peripheral vision restricts the ability of an individual to move about freely. The extent of

impairment of sight should be determined by visual testing.

2. *Central visual acuity.* A loss of central visual acuity may be caused by impaired distant and/or near vision. However, for an individual to meet the level of severity described in 2.02 and 2.04, only the remaining central visual acuity for distance of the better eye with best correction based on the Snellen test chart measurement may be used. Correction obtained by special visual aids (e.g., contact lenses) will be considered if the individual has the ability to wear such aids.

3. *Field of vision.* Impairment of peripheral vision may result if there is contraction of the visual fields. The contraction may be either symmetrical or irregular. The extent of the remaining peripheral visual field will be determined by usual perimetric methods at a distance of 330 mm. under illumination of not less than 7-foot candles. For the phakic eye (the eye with a lens), a 3 mm. white disc target will be used, and for the aphakic eye (the eye without the lens), a 6 mm. white disc target will be used. In neither instance should corrective spectacle lenses be worn during the examination but if they have been used, this fact must be stated.

Measurements obtained on comparable perimetric devices may be used; this does not include the use of tangent screen measurements. For measurements obtained using the Goldmann perimeter, the object size designation III and the illumination designation 4 should be used for the phakic eye, and the object size designation IV and illumination designation 4 for the aphakic eye.

Field measurements must be accompanied by notated field charts, a description of the type and size of the target and the test distance. Tangent screen visual fields are not acceptable as a measurement of peripheral field loss.

Where the loss is predominantly in the lower visual fields, a system such as the weighted grid scale for perimetric fields described by B. Esterman (see Grid for Scoring Visual Fields, II. Perimeter, *Archives of Ophthalmology*, 79:400, 1968) may be used for determining whether the visual field loss is comparable to that described in Table 2.

4. *Muscle function.* Paralysis of the third cranial nerve producing ptosis, paralysis of accommodation, and dilation and immobility of the pupil may cause significant visual impairment. When all the muscle of the eye are paralyzed including the iris and ciliary body (total ophthalmoplegia), the condition is considered a severe impairment provided it is bilateral. A finding of severe impairment based primarily on impaired muscle function must be supported by a report of an actual measurement of ocular motility.

5. *Visual efficiency.* Loss of visual efficiency may be caused by disease or injury resulting in a reduction of central visual acuity or visual field. The visual efficiency of one eye is

the product of the percentage of central visual efficiency and the percentage of visual field efficiency. (See Tables No. 1 and 2, following 2.09.)

6. *Special situations.* Aphakia represents a visual handicap in addition to the loss of central visual acuity. The term monocular aphakia would apply to an individual who has had the lens removed from one eye, and who still retains the lens in his other eye, or to an individual who has only one eye which is aphakic. The term binocular aphakia would apply to an individual who has had both lenses removed. In cases of binocular aphakia, the central efficiency of the better eye will be accepted as 75 percent of its value. In cases of monocular aphakia, where the better eye is aphakic, the central visual efficiency will be accepted as 50 percent of the value. (If an individual has binocular aphakia, and the central visual acuity in the poorer eye can be corrected only to 20/200, or less, the central visual efficiency of the better eye will be accepted as 50 percent of its value.)

Ocular symptoms of systemic disease may or may not produce a disabling visual impairment. These manifestations should be evaluated as part of the underlying disease entity by reference to the particular body system involved.

7. *Statutory blindness.* The term "statutory blindness" refers to the degree of visual impairment which defines the term "blindness" in the Social Security Act. Both 2.02 and 2.03 A and B denote statutory blindness.

B. *Otolaryngology*

1. *Hearing impairment.* Hearing ability should be evaluated in terms of the person's ability to hear and distinguish speech.

Loss of hearing can be quantitatively determined by an audiometer which meets the standards of the American National Standards Institute (ANSI) for air and bone conducted stimuli (i.e., ANSI S 3.6-1969 and ANSI S 3.13-1972, or subsequent comparable revisions) and performing all hearing measurements in an environment which meets the ANSI standard for maximal permissible background sound (ANSI S 3.1-1977).

Speech discrimination should be determined using a standardized measure of speech discrimination ability in quiet at a test presentation level sufficient to ascertain maximum discrimination ability. The speech discrimination measure (test) used, and the level at which testing was done, must be reported.

Hearing tests should be preceded by an otolaryngologic examination and should be performed by or under the supervision of an otolaryngologist or audiologist qualified to perform such tests.

In order to establish an independent medical judgment as to the level of impairment in a claimant alleging deafness, the following examinations should be reported:

Otolaryngologic examination, pure tone air and bone audiometry, speech reception threshold (SRT), and speech discrimination testing. A copy of reports of medical examination and audiologic evaluations must be submitted.

Cases of alleged "deaf mutism" should be documented by a hearing evaluation. Records obtained from a speech and hearing rehabilitation center or a special school for the deaf may be acceptable, but if these reports are not available, or are found to be inadequate, a current hearing evaluation should be submitted as outlined in the preceding paragraph.

2. *Vertigo associated with disturbances of labyrinthine-vestibular function, including Meniere's disease.* These disturbances of balance are characterized by an hallucination of motion or loss of position sense and a sensation of dizziness which may be constant or may occur in paroxysmal attacks. Nausea, vomiting, ataxia, and incapacitation are frequently observed, particularly during the acute attack. It is important to differentiate the report of rotary vertigo from that of "dizziness" which is described as lightheadedness, unsteadiness, confusion, or syncope.

Meniere's disease is characterized by paroxysmal attacks of vertigo, tinnitus, and fluctuating hearing loss. Remissions are unpredictable and irregular, but may be longlasting; hence, the severity of impairment is best determined after prolonged observation and serial reexaminations.

The diagnosis of a vestibular disorder requires a comprehensive neuro-otolaryngologic examination with a detailed description of the vertiginous episodes, including notation of frequency, severity, and duration of the attacks. Pure tone and speech audiometry with the appropriate special examinations, such as Bekesy audiometry, are necessary. Vestibular functions is assessed by positional and caloric testing, preferably by electronystagmography. When polytograms, contrast radiography, or other special tests have been performed, copies of the reports of these tests should be obtained in addition to reports of skull and temporal bone X-rays.

3. *Organic loss of speech.* Glossectomy or laryneectomy or cicatricial laryngeal stenosis due to injury or infection results in loss of voice production by normal means. In evaluating organic loss of speech (see 2.09), ability to produce speech by any means includes the use of mechanical or electronic devices. Impairment of speech due to neurologic disorders should be evaluated under 11.00-11.19.

2.01 Category of Impairments, Special Senses and Speech

2.02 *Impairment of central visual acuity.* Remaining vision in the better eye after best correction is 20/200 or less.

2.03 *Contraction of peripheral visual fields in the better eye.*

A. To 10½ or less from the point of fixation; or

B. So the widest diameter subtends an angle no greater than 20½; or

C. To 20 percent or less visual field efficiency.

2.04 *Loss of visual efficiency.* Visual efficiency of better eye after best correction 20 percent or less. (The percent of remaining visual efficiency=the product of the percent of remaining central visual efficiency and the percent of remaining visual field efficiency.)

2.05 *Complete homonymous hemianopsia* (with or without macular sparing). Evaluate under 2.04.

2.06 *Total bilateral ophthalmoplegia.*

2.07 *Disturbance of labyrinthine-vestibular function (including Meniere's disease),* characterized by a history of frequent attacks of balance disturbance, tinnitus, and progressive loss of hearing. With both A and B:

A. Disturbed function of vestibular labyrinth demonstrated by caloric or other vestibular tests; and

B. Hearing loss established by audiometry.

2.08 *Hearing impairments* (hearing not restorable by a hearing aid) manifested by:

A. Average hearing threshold sensitivity for air conduction of 90 decibels or greater and for bone conduction to corresponding maximal levels, in the better ear, determined by the simple average of hearing threshold levels at 500, 1000 and 2000 hz. (see 2.00B1); or

B. Speech discrimination scores of 40 percent or less in the better ear;

2.09 *Organic loss of speech* due to any cause with inability to produce by any means speech which can be heard understood and sustained.

1. Diagram of right eye illustrates extent of normal visual field as tested on standard perimeter at 3/330 (3 mm. white disc at a dis-

tance of 330 mm.) under 7 foot-candles illumination. The sum of the eight principal meridians of this field total 500½.

2. The percent of visual field efficiency is obtained by adding the number of degrees of the eight principal meridians of the contracted field and dividing by 500. Diagram of left eye illustrates visual field contracted to 30½ in the temporal and down and out meridians and to 20½ in the remaining six meridians. The percent of visual field efficiency of this field is: $6 \times 20 + 2 \times 30 = 180 + 60 = 240$ or 48 percent remaining visual field efficiency, or 52 percent loss.

TABLE NO. 1—PERCENTAGE OF CENTRAL VISUAL EFFICIENCY CORRESPONDING TO CENTRAL VISUAL ACUITY NOTATIONS FOR DISTANCE IN THE PHAKIC AND APHAKIC EYE (BETTER EYE)

Snellen		Percent central visual efficiency		
English	Metric	Phakic ¹	Aphakic monocular ²	Aphakic binocular ³
20/16	6/5	100	50	75
20/20	6/6	100	50	75
20/25	6/7.5	95	47	71
20/32	6/10	90	45	67
20/40	6/12	85	42	64
20/50	6/15	75	37	56
20/64	6/20	65	32	49
20/80	6/24	60	30	45
20/100	6/30	50	25	37
20/125	6/38	40	20	30
20/160	6/48	30	.....	22
20/200	6/60	20	.....	.....

Column and Use.

¹Phakic.—1. A lens is present in both eyes. 2. A lens is present in the better eye and absent in the poorer eye. 3. A lens is present in one eye and the other eye is enucleated.

²Monocular.—1. A lens is absent in the better eye and present in the poorer eye. 2. The lenses are absent in both eyes; however, the central visual acuity in the poorer eye after best correction is 20/200 or less. 3. A lens is absent from one eye and the other eye is enucleated.

³Binocular.—1. The lenses are absent from both eyes and the central visual acuity in the poorer eye after best correction is greater than 20/200.

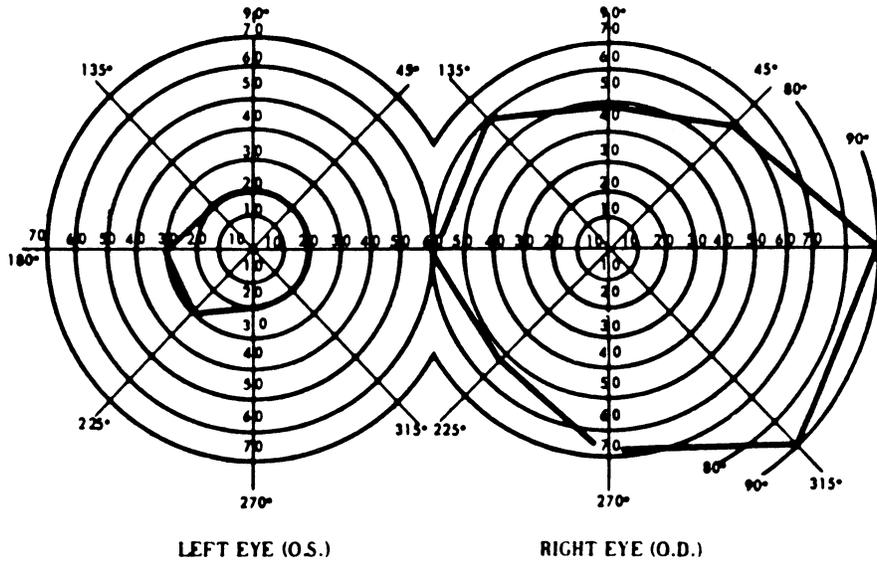


TABLE NO. 2—CHART OF VISUAL FIELD SHOWING EXTENT OF NORMAL FIELD AND METHOD OF COMPUTING PERCENT OF VISUAL FIELD EFFICIENCY

3.00 RESPIRATORY SYSTEM

A. *Introduction:* Impairments caused by the chronic disorder of the respiratory system generally result from irreversible loss of pulmonary functional capacity (ventilatory impairment, gas exchange impairment, or a combination of both). The most common symptom attributable to these disorders is dyspnea on exertion. Cough, wheezing, sputum production, hemoptysis, and chest pain may also occur, but need not be present. However, since these symptoms are common to many other diseases, evaluation of impairments of the respiratory system requires a history, physical examination, and chest roentgenogram to establish the diagnosis of a chronic respiratory disorder. Pulmonary function testing is required to provide a basis for assessing the impairment, once the diagnosis is established by appropriate clinical findings.

Alteration of ventilatory function may be due primarily to chronic obstructive pulmonary disease (emphysema, chronic bronchitis, chronic asthmatic bronchitis) or restrictive disorders with primary loss of lung volume (pulmonary resection, thoracoplasty, chest cage deformity as seen in kyphoscoliosis), or infiltrative interstitial disorders (diffuse fibrosis). Impairment of gas exchange without significant airway obstruction may be produced by interstitial disorders (diffuse fibrosis). Primary disease

of pulmonary circulation may produce pulmonary vascular hypertension and, eventually, heart failure. Whatever the mechanism, any chronic progressive pulmonary disorder may result in cor pulmonale or heart failure. Chronic infection caused, most frequently by mycobacterial or mycotic organisms, may produce extensive lung destruction resulting in marked loss of pulmonary functional capacity. Some disorders such as bronchiectasis and asthma may be characterized by acute, intermittent illnesses of such frequency and intensity that they produce a marked impairment apart from intercurrent functional loss, which may be mild.

Most chronic pulmonary disorders may be adequately evaluated on the basis of history, physical examination, chest roentgenogram, and ventilatory function tests. Direct assessment of gas exchange by exercise arterial blood gas determination or diffusing capacity is required only in specific relatively rare circumstances, depending on the clinical features and specific diagnosis.

B. *Mycobacterial and mycotic infections of the lung will be evaluated* on the basis of the resulting impairment to pulmonary function. Evidence of infectious or active mycobacterial or mycotic infection, such as positive cultures, increasing lesions, or cavitation, is not, by itself, a basis for determining that the individual has a severe impairment which is expected to last 12

months. However, if these factors are abnormally persistent, they should not be ignored. For example, in those unusual cases where there is evidence of persistent pulmonary infection caused by mycobacterial or mycotic organisms for a period closely approaching 12 consecutive months, the clinical findings, complications, treatment considerations, and prognosis must be carefully assessed to determine whether, despite the absence of impairment of pulmonary function, the individual has a severe impairment that can be expected to last for 12 consecutive months.

C. *When a respiratory impairment is episodic in nature*, as may occur in complications of bronchiectasis and asthmatic bronchitis, the frequency of severe episodes despite prescribed treatment is the criterion for determining the level of impairment. Documentation for episodic asthma should include the hospital or emergency room records indicating the dates of treatment, clinical findings on presentation, what treatment was given and for what period of time, and the clinical response. Severe attacks of episodic asthma, as listed in section 3.03B, are defined as prolonged episodes lasting at least several hours, requiring intensive treatment such as intravenous drug administration or inhalation therapy in a hospital or emergency room.

D. *Documentation of ventilatory function tests*. The results of ventilatory function studies for evaluation under tables I and II should be expressed in liters or liters per minute (BTPS). The reported one second forced expiratory volume (FEV₁) should represent the largest of at least three attempts. One satisfactory maximum voluntary ventilation (MVV) is sufficient. The MVV should represent the observed value and should not be calculated from FEV₁. These studies should be repeated after administration of a nebulized bronchodilator unless the prebronchodilator values are 80 percent or more of predicted normal values or the use of bronchodilators is contraindicated. The values in tables I and II assume that the ventilatory function studies were not performed in the presence of wheezing or other evidence of bronchospasm or, if these were present at the time of the examination, that the studies were repeated after administration of a bronchodilator. Ventilatory function studies performed in the presence of bronchospasm, without use of bronchodilators, cannot be found to meet the requisite level of severity in tables I and II.

The appropriately labeled spirometric tracing, showing distance per second on the abscissa and the distance per liter on the ordinate, must be incorporated in the file. The manufacturer and model number of the device used to measure and record the ventilatory function should be stated. If the spirogram was generated other than by direct pen linkage to a mechanical displace-

ment-type spirometer, the spirometric tracing must show the calibration of volume units through mechanical means such as would be obtained using a giant syringe. The FEV₁ must be recorded at a speed of at least 20 mm. per second. Calculation of the FEV₁ from a flow volume loop is not acceptable. The recording device must provide a volume excursions of at least 10 mm. per liter. The MVV should be represented by the tidal excursions measured over a 10- to 15-second interval. Tracings showing only cumulative volume for the MVV are not acceptable. The ventilatory function tables are based on measurement of the height of the individual without shoes. Studies should not be performed during or soon after an acute respiratory illness. A statement should be made as to the individual's ability to understand the directions and cooperate in performing the test.

E. *Documentation of chronic impairment of gas exchange—Arterial blood gases and exercise tests*.

1. *Introduction*: Exercise tests with measurement of arterial blood gases at rest and during exercise should be purchased when not available as evidence of record in cases in which there is documentation of chronic pulmonary disease, but the existing evidence, including properly performed ventilatory function tests, is not adequate to evaluate the level of the impairment. Before purchasing arterial blood gas tests, medical history, physical examination, report of chest roentgenogram, ventilatory function tests, electrocardiographic tracing, and hematocrit must be obtained and should be evaluated by a physician competent in pulmonary medicine. Arterial blood gas tests should not be purchased where full development short of such purchase reveals that the impairment meets or equals any other listing or when the claim can be adjudicated on some other basis. Capillary blood analysis for PO₂ or PCO₂ is not acceptable. Analysis of arterial blood gases obtained after exercise is stopped is not acceptable.

Generally individuals with an FEV₁ greater than 2.5 liters or an MVV greater than 100 liters per minute would not be considered for blood gas studies unless diffuse interstitial pulmonary fibrosis was noted on chest X-ray or documented by tissue diagnosis. The exercise test facility should be provided with the clinical reports, report of chest roentgenogram, and spirometry results obtained by the DDS. The testing facility should determine whether exercise testing is clinically contraindicated. If an exercise test is clinically contraindicated, the reason for exclusion from the test should be stated in the report of the exercise test facility.

2. *Methodology*. Individuals considered for exercise testing first should have resting PaO₂, PaCO₂, and pH determinations by the

testing facility. The samples should be obtained in the sitting or standing position. The individual should be exercised under steady state conditions, preferably on a treadmill for a period of 6 minutes at a speed and grade providing a workload of approximately 17 ml. O₂/kg./min. If a bicycle ergometer is used, an exercise equivalent of 450 kgm./min., or 75 watts, should be used. At the option of the facility, a warm-up period of treadmill walking may be performed to acquaint the applicant with the procedure. If, during the warm-up period, the individual cannot exercise at the designated level, a lower speed and/or grade may be selected in keeping with the exercise capacity estimate. The individual should be monitored by electrocardiogram throughout the exercise and representative strips taken to provide heart rate in each minute of exercise. During the 5th or 6th minute of exercise, an arterial blood gas sample should be drawn and analyzed for PO₂, PCO₂, and pH. If the facility has the capability, and at the option of the DDS and the facility, minute ventilation (BTPS) and oxygen consumption per minute (STPD) and CO₂ production (STPD) should be measured during the 5th or 6th minute of exercise. If the individual fails to complete 6 minutes of exercise, the facility should comment on the reason.

The report should contain representative strips of electrocardiograms taken during the exercise, hematocrit, resting and exercise arterial blood gas value, speed and grade of the treadmill or bicycle ergometer exercise level in watts or kgm./min., and duration of exercise. The altitude of the test site, barometric pressure, and normal range of blood gas values for that facility should also be reported.

3. *Evaluation.* Three tables are provided in Listing 3.02C1 for evaluation of arterial blood gas determinations at rest and during exercise. The blood gas levels in Listing 3.02C1, Table III-A, are applicable at test sites situated at less than 3,000 feet above sea level. The blood gas levels in Listing 3.02C1, Table III-B, are applicable at test sites situated at 3,000 through 6,000 feet above sea level. The blood gas levels in Listing 3.02C1, Table III-C, are applicable for test sites over 6,000 feet above sea level. Tables III-B and C, take into account the lower blood PaO₂ normally found in individuals tested at the higher altitude. When the barometric pressure is unusually high for the altitude at the time of testing, consideration should be given to those cases in which the PaO₂ falls slightly above the requirements of Table III-A, III-B, or III-C, whichever is appropriate for the altitude at which testing was performed.

3.01 Category of Impairments, Respiratory
3.02 *Chronic Pulmonary Insufficiency.*

With:

A. Chronic obstructive pulmonary disease (due to any cause). With: Both FEV₁ and

MVV equal to or less than values specified in Table I corresponding to the person's height without shoes.

TABLE I

Height without shoes (inches)	FEV ₁ and MVV	
	Equal to or less than (L, BTPS)	(MBC) equal to or less than (L/min., BTPS)
60 or less	1.0	40
61-63	1.1	44
64-65	1.2	48
66-67	1.3	52
68-69	1.4	56
70-71	1.5	60
72 or more	1.6	64

or

B. *Chronic restrictive ventilatory disorders.* With: Total vital capacity equal to or less than values specified in Table II corresponding to the person's height without shoes. In severe kyphoscoliosis, the measured span between the fingertips when the upper extremities are abducted 90 degrees should be substituted for height.

TABLE II

Height without shoes (inches)	VC equal to or less than (L, BTPS)
60 or less	1.2
61-63	1.3
64-65	1.4
66-67	1.5
68-69	1.6
70-71	1.7
72-or more	1.8

or

C. *Chronic impairment of gas exchange* (due to any cause). With:

1. Steady-state exercise blood gases demonstrating values of PaO₂ and simultaneously determined PaCO₂, measured at a workload of approximately 17 ml. O₂/kg./min. or less of exercise, equal to or less than the values specified in Table III-A or III-B or III-C.

TABLE III—A

[Applicable at test sites less than, 3,000 feet above sea level]

Arterial PCO ₂ (mm. Hg)	Arterial PO ₂ and equal to or less than (mm. Hg)
30 or below	65
31	64
32	63
33	62
34	61
35	60
36	59

TABLE III—A—Continued

[Applicable at test sites less than, 3,000 feet above sea level]

Arterial PCO ₂ (mm. Hg)	Arterial PO ₂ and equal to or less than (mm. Hg)
37	58
38	57
39	56
40 or above	55

TABLE III—B

[Applicable at test sites 3,000 through 6,000 feet above sea level]

Arterial PCO ₂ (mm. Hg)	Arterial PO ₂ and equal to or less than (mm. Hg)
30 or below	60
31	59
32	58
33	57
34	56
35	55
36	54
37	53
38	52
39	51
40 or above	50

TABLE III—C

[Applicable at test sites over 6,000 feet above sea level]

Arterial PCO ₂ (mm. Hg) and	Arterial PO ₂ equal to or less than (mm. Hg)
30 or below	56
31	54
32	53
33	52
34	51
35	50
36	49
37	48
38	47
39	46
40 or above	45

or

2. Diffusing capacity for the lungs for carbon monoxide less than 6 ml./mm. Hg/min. (steady-state methods) or less than 9 ml./mm. Hg/min. (single breath method) or less than 30 percent of predicted normal. (All method, actual values, and predicted normal values for the methods used should be reported.): or

D. Mixed obstructive ventilatory and gas exchange impairment. Evaluate under the criteria in 3.02A, B, and C.

3.03 *Asthma*. With:

A Chronic asthmatic bronchitis. Evaluate under the criteria for chronic obstructive ventilatory impairment in 3.02A, or

B. Episodes of severe attacks (See 3.00C), in spite of prescribed treatment, occurring at least once every 2 months or on an average of at least 6 times a year, and prolonged expiration with wheezing or rhonchi on physical examination between attacks.

3.06 *Pneumoconiosis (demonstrated by roentgenographic evidence)*. Evaluate under criteria in 3.02.

3.07 *Bronchiectasis (demonstrated by radio-opaque material)*. With:

A. Episodes of acute bronchitis or pneumonia or hemoptysis (more than blood-streaked sputum) occurring at least every 2 months; or

B. Impairment of pulmonary function due to extensive disease should be evaluated under the applicable criteria in 3.02.

3.08 *Mycobacterial infection of the lung*. Impairment of pulmonary function due to extensive disease should be evaluated under appropriate criteria in 3.02.

3.09 *Mycotic infection of the lung*. Impairment of pulmonary function due to extensive disease should be evaluated under the appropriate criteria in 3.02.

3.11 *Cor pulmonale, or pulmonary vascular hypertension*. Evaluate under the criteria in 4.02D.

4.00 CARDIOVASCULAR SYSTEM

A. *Severe cardiac impairment* results from one or more of three consequences of heart disease; (1) congestive heart failure; (2) ischemia (with or without necrosis) of heart muscle; (3) conduction disturbances and/or arrhythmias resulting in cardiac syncope.

With diseases of arteries and veins, severe impairment may result from disorders of the vasculature in the central nervous system, eyes, kidneys, extremities, and other organs.

The criteria for evaluating impairment resulting from heart diseases or diseases of the blood vessels are based on symptoms, physical signs and pertinent laboratory findings.

B. *Congestive heart failure* is considered in the Listing under one category whatever the etiology (i.e., arteriosclerotic, hypertensive, rheumatic, pulmonary, congenital, or other organic heart diseases). Congestive heart failure is not considered to have been established for the purpose of 4.02 unless there is evidence of vascular congestion such as hepatomegaly or peripheral or pulmonary edema which is consistent with clinical diagnosis. (Radiological description of vascular congestion, unless supported by appropriate clinical evidence, should not be construed as pulmonary edema.) The findings of vascular congestion need not be present at the time of adjudication (except for 4.02A), but must be casually related to the current episode of marked impairment. The findings other than vascular congestion must be persistent.

Other congestive, ischemic, or restrictive (obstructive) heart diseases such as caused by cardiomyopathy or aortic stenosis may result in significant impairment due to congestive heart failure, rhythm disturbances, or ventricular outflow obstruction in the absence of left ventricular enlargement as described in 4.02B1. However, the ECG criteria as defined in 4.02B2 should be fulfilled. Clinical findings such as symptoms of dyspnea, fatigue, rhythm disturbances, etc., should be documented and the diagnosis confirmed by echocardiography or at cardiac catheterization.

C. *Hypertensive vascular diseases* does not result in severe impairment unless it causes severe damage to one or more of four end organs; heart, brain, kidneys, or eyes. (retinae). The presence of such damage must be established by appropriate abnormal physical signs and laboratory findings as specified in 4.02 or 4.04, or for the body system involved.

D. *Ischemic heart diseases* may result in a marked impairment due to chest pain. Description of the pain must contain the clinical characteristics as discussed under 4.00E. In addition, the clinical impression of chest pain of cardiac origin must be supported by objective evidence as described under 4.00 F.G. or H.

E. *Chest pain of cardiac origin* is considered to be pain which is precipitated by effort and promptly relieved by sublingual nitroglycerin or rapid-acting nitrates or rest. The character of the pain is classically described as crushing squeezing, burning, or oppressive pain located in the chest. Excluded is sharp, sticking or rhythmic pain. Pain occurring on exercise should be described specifically as to usual inciting factors (kind and degree), character, location, radiation, duration, and responses to nitroglycerin or rest.

So-called "anginal equivalent" locations manifested by pain in the throat, arms, or hands have the same validity as the chest pain described above. Status anginosus and variant angina of the Prinzmetal type (e.g., rest angina with transitory ST elevation on electrocardiogram) will be considered to have the same validity as classical angina pectoris as described above. Shortness of breath as an isolated finding should not be considered as an anginal equivalent.

Chest pain that appears to be of cardiac origin may be caused by noncoronary conditions. Evidence for the latter should be actively considered in determining whether the chest pain is of cardiac origin. Among the more common conditions which may masquerade as angina are gastrointestinal tract lesions such as biliary tract disease, esophagitis, hiatal hernia, peptic ulcer, and pancreatitis; and musculoskeletal lesions such as costochondritis and cervical arthritis.

F. *Documentation of electrocardiography.*

1. *Electrocardiograms obtained at rest* must be submitted in the original or a legible copy of a 12-lead tracing appropriately labeled, with the standardization inscribed on the tracing. Alteration in standardization of specific leads (such as to accommodate large ORS amplitudes) must be shown on those leads.

The effect of drugs, electrolyte imbalance, etc., should be considered as possible non-coronary causes of ECG abnormalities, especially those involving the ST segment. If needed and available, pre-drug (especially predigitalis) tracing should be obtained.

The term "ischemic" is used in 4.04 to describe a pathologic ST deviation. Nonspecific repolarization changes should not be confused with ischemic configurations or a current of injury.

Detailed descriptions or computer interpretations without the original or legible copies of the ECG are not acceptable.

2. *Electrocardiograms obtained in conjunction with exercise tests* must include the original tracings or a legible copy of appropriate leads obtained before, during, and after exercise. Test control tracings, taken before exercise in the upright position, must be obtained. An ECG after 20 seconds of vigorous hyperventilation should be obtained. A posthyperventilation tracing may be essential for the proper evaluation of an "abnormal" test in certain circumstances, such as in women with evidence of mitral valve prolapse. A tracing should be taken at approximately 5 METs of exercise and at the time the ECG becomes abnormal according to the criteria in 4.04A. The time of onset of these abnormal changes must be noted, and the ECG tracing taken at the time should be obtained. Exercise histograms without the original tracings or legible copies are not acceptable.

Whenever electrocardiographically documented stress test data are submitted, irrespective of the type, the standardization must be inscribed on the tracings and the strips must be labeled appropriately, indicating the times recorded. The degree of exercise achieved, the blood pressure levels during the test, and any reason for terminating the test must be included in the report.

G. *Exercise testing.*

1. *When to purchase.* Since the results of a treadmill exercise test are the primary basis for adjudicating claims under 4.04, they should be included in the file whenever they have been performed. There are also circumstances under which it will be appropriate to purchase exercise tests. Generally, these are limited to claims involving chest pain which is considered to be of cardiac origin but without corroborating ECG or other evidence of ischemic heart disease.

Exercise test should not be purchased in the absence of alleged chest pain of cardiac

origin. Even in the presence of an allegation of chest pain of cardiac origin, an exercise test should not be purchased where full development short of such a purchase reveals that the impairment meets or equals any Listing or the claim can be adjudicated on some other basis.

2. *Methodology.* When an exercise test is purchased, it should be a treadmill type using a continuous progressive multistage regimen. The targeted heart rate should be not less than 85 percent of the maximum predicted heart rate unless it becomes hazardous to exercise to the heart rate or becomes unnecessary because the ECG meets the criteria in 4.04A at a lower heart rate (see also 4.00F.2). Beyond these requirements, it is prudent to accept the methodology of a qualified, competent test facility. In any case, a precise description of the protocol that was followed must be provided.

3. *Limitations of exercise testing.* Exercise testing should not be purchased for individuals who have the following: unstable progressive angina pectoris; recent onset (approximately 2 months) of angina; congestive heart failure; uncontrolled serious arrhythmias (including uncontrolled auricular fibrillation); second or third-degree heart block; Wolff-Parkinson-White syndrome; uncontrolled marked hypertension; marked aortic stenosis; marked pulmonary hypertension; dissecting or ventricular aneurysms; acute illness; limiting neurological or musculoskeletal impairments; or for individuals on medication where performance of stress testing may constitute a significant risk.

The presence of noncoronary or nonischemic factors which may influence the ECG response to exercise include hypokalemia, hyperventilation, vasoregulatory asthenia, significant anemia, left bundle branch block, and other heart disease, particularly valvular.

Digitalis may cause ST segment abnormalities at rest, during, and after exercise. Digitalis-related ST depression, present at rest, may become accentuated and result in false interpretations of the ECG taken during or after exercise test.

4. *Evaluation.* Where the evidence includes the results of a treadmill exercise test, this evidence is the primary basis for adjudicating claims under 4.04. For purposes of this Social Security disability program, treadmill exercise testing will be evaluated on the basis of the level at which the test becomes positive in accordance with the ECG criteria in §404A. However, the significance of findings of a treadmill exercise test must be considered in light of the clinical course of the disease which may have occurred subsequent to performance of the exercise test. The criteria in 4.04B are not applicable if there is documentation of an acceptable treadmill exercise test, if there is no evidence of a treadmill exercise test or if the test is not

acceptable, the criteria in 4.04B should be used. The level of exercise is considered in terms of multiples of MET's (metabolic equivalent units). One MET is the basal O₂ requirement of the body in an inactive state, sitting quietly. It is considered by most authorities to be approximately 3.5 ml. O₂/kg./min.

H. *Angiographic evidence.*

1. *Coronary arteriography.* This procedure is not to be purchased by the Social Security Administration. Should the results of such testing be available, the report should be considered as to the quality and kind of data provided and its applicability to the requirements of the Listing of Impairments. A copy of the report of the catheterization and ancillary studies should be obtained. The report should provide information as to the technique used, the method of assessing coronary lumen diameter, and the nature and location of any obstructive lesions.

It is helpful to know the method used, the number of projections, and whether selective engagement of each coronary vessel was satisfactorily accomplished. It is also important to know whether the injected vessel was entirely and uniformly opacified, thus avoiding the artifactual appearance of narrowing or an obstruction.

Coronary artery spasm induced by intracoronary catheterization is not to be considered as evidence of ischemic heart disease.

Estimation of the functional significance of an obstructive lesion may also be aided by description of how well the distal part of the vessel is visualized. Some patients with significant proximal coronary atherosclerosis have well-developed large collateral blood supply to the distal vessels without evidence of myocardial damage or ischemia, even under conditions of severe stress.

2. *Left ventriculography.* The report should describe the local contractility of the myocardium as may be evident from areas of hypokinesia, dyskinesia, or akinesia; and the overall contractility of the myocardium as measured by the ejection fraction.

3. *Proximal coronary arteries* (see 4.04B7) will be considered as the:

- a. Right coronary artery proximal to the acute marginal branch; or
- b. Left anterior descending coronary artery proximal to the first septal perforator; or
- c. Left circumflex coronary artery proximal to the first obtuse marginal branch.

I. *Results of other tests.* Information from adequate reports of other tests such as radionuclide studies or echocardiography should be considered where that information is comparable to the requirements in the listing. An ejection fraction measured by echocardiography is not determinative, but may be given consideration in the context of associated findings.

J. Major surgical procedures. The amount of function restored and the time required to effect improvement after heart or vascular surgery vary with the nature and extent of the disorder, the type of surgery, and other individual factors. If the criteria described for heart or vascular disease are met, proposed heart or vascular surgery (coronary artery bypass procedure, valve replacement, major arterial grafts, etc.) does not militate against a finding of disability with subsequent assessment postoperatively.

The usual time after surgery for adequate assessment of the results of surgery is considered to be approximately 3 months. Assessment of the magnitude of the impairment following surgery requires adequate documentation of the pertinent evaluations and tests performed following surgery, such as an interval history and physical examination, with emphasis on those signs and symptoms which might have changed postoperatively, as well as X-rays and electrocardiograms. Where treadmill exercise tests or angiography have been performed following the surgical procedure, the results of these tests should be obtained.

Documentation of the preoperative evaluation and a description of the surgical procedure are also required. The evidence should be documented from hospital records (catheterization reports, coronary arteriographic reports, etc.) and the operative note.

Implantation of a cardiac pacemaker is not considered a major surgical procedure for purposes of this section.

K. Evaluation of peripheral arterial disease. The evaluation of peripheral arterial disease is based on medically acceptable clinical findings providing adequate history and physical examination findings describing the impairment, and on documentation of the appropriate laboratory techniques. The specific findings stated in Listing 4.13 represent the level of severity of that impairment; these findings, by themselves, are not intended to represent the basis for establishing the clinical diagnosis. The level of the impairment is based on the symptomatology, physical findings, Doppler studies before and after a standard exercise test, and/or angiographic findings.

The requirements for evaluation of peripheral arterial disease in Listing 4.13B are based on the ratio of systolic blood pressure at the ankle, determined by Doppler study, to the systolic blood pressure at the brachial artery determined at the same time. Results of plethysmographic studies, or other techniques providing systolic blood pressure determinations at the ankle, should be considered where the information is comparable to the requirements in the listing.

Listing 4.13B.1 provides for determining that the listing is met when the resting ankle/brachial systolic blood pressure ratio is less than 0.50. Listing 4.13B.2 provides ad-

ditional criteria for evaluating peripheral arterial impairment on the basis of exercise studies when the resting ankle/brachial systolic blood pressure ratio is 0.50 or above. The results of exercise studies should describe the level of exercise (e.g., speed and grade of the treadmill settings), the duration of exercise, symptoms during exercise, the reasons for stopping exercise if the expected level of exercise was not attained, blood pressures at the ankle and other pertinent levels measured after exercise, and the time required to return the systolic blood pressure toward or to, the preexercise level. When exercise Doppler studies are purchased by the Social Security Administration, it is suggested that the requested exercise be on a treadmill at 2 mph. on a 12 percent grade for 5 minutes. Exercise studies should not be performed on individuals for whom exercise is contraindicated. The methodology of a qualified, competent facility should be accepted. In any case, a precise description of the protocol that was followed must be provided.

It must be recognized that application of the criteria in Listing 4.13B may be limited in individuals who have severe calcific (Monckeberg's) sclerosis of the peripheral arteries or severe small vessel disease in individuals with diabetes mellitus.

4.01 Category of Impairments, Cardiovascular System

4.02 *Congestive heart failure (manifested by evidence of vascular congestion such as hepatomegaly, peripheral or pulmonary edema).* With:

A. Persistent congestive heart failure on clinical examination despite prescribed therapy; or

B. Persistent left ventricular enlargement and hypertrophy documented by both:

1. Extension of the cardiac shadow (left ventricle) to the vertebral column on a left lateral chest roentgenogram; and

2. ECG showing QRS duration less than 0.12 second with S_{11} plus R_{v5} (or R_{v6}) of 35 mm. or greater and ST segment depressed more than 0.5 mm. and low, diphasic or inverted T waves in leads with tall R waves; or

C. Persistent "mitral" type heart involvement documented by left atrial enlargement shown by double shadow on PA chest roentgenogram (or characteristic distortion of barium-filled esophagus) and either:

1. ECG showing QRS duration less than 0.12 second with S_{11} plus R_{v5} (or R_{v6}) of 35 mm. or greater and ST segment depressed more than 0.5 mm. and low, diphasic or inverted T waves in leads with tall R waves; or

2. ECG evidence of right ventricular hypertrophy with R wave of 5.0 mm. or greater in lead V_1 and progressive decrease in R/S amplitude from lead V_1 to V_5 or V_6 ; or

D. Cor pulmonale (non-acute) documented by both:

1. Right ventricular enlargement (or prominence of the right out-flow tract) on chest roentgenogram or fluoroscopy; and

2. ECG evidence of right ventricular hypertrophy with R wave of 5.0 mm. or greater in lead V_1 and progressive decrease in R/S amplitude from lead V_1 to V_5 or V_6

4.03 *Hypertensive vascular disease.* Evaluate under 4.02 04 4.04 or under the criteria for the affected body system.

4.04 *Ischemic heart disease with chest pain or cardiac origin as described in 4.00E* With:

A. Treadmill exercise test (see 4.00 F and (G) demonstrating one of the following at an exercise level of 5 METs or less:

1. Horizontal or downsloping depression (from the standing control) of the ST segment to 1.0 mm. or greater, lasting for at least 0.08 second after the J junction, and clearly discernible in at least two consecutive complexes which are on a level baseline in any lead; or

2. Junctional depression occurring during exercise, remaining depressed (from the standing control) to 2.0 mm. or greater for at least 0.08 second after the J junction (the so-called slow upsloping ST segment), and clearly discernible in at least two consecutive complexes which are on a level baseline in any lead; or

3. Premature ventricular systoles which are multiform or bidirectional or are sequentially inscribed (3 or more); or

4. ST segment elevation (from the standing control) to 1 mm. or greater; or

5. Development of second or third degree heart block; or

B. In the absence of a report of an acceptable treadmill exercise test (see 4.00G), one of the following:

1. Transmural myocardial infarction exhibiting a QS pattern or a Q wave with amplitude at least $\frac{1}{3}$ rd of R wave and with a duration of 0.04 second or more. (If these are present in leads III and a VF only, the requisite Q wave findings must be shown, by labelled tracing, to persist on deep inspiration); or

2. Resting ECG findings showing ischemic-type (see §4.00F1) depression of ST segment to more than 0.5 mm. in either (a) leads I and a VL and V_6 or (b) leads II and III and a VF or (c) leads V_3 through V_6 ; or

3. Resting ECG findings showing an ischemic configuration or current of injury (see 4.00F1) with ST segment elevation to 2 mm. or more in either (a) leads I and a VL and V_6 or (b) leads II and III and a VF or (c) leads V_3 through V_6 ; or

4. Resting ECG findings showing symmetrical inversion of T waves to 5.0 mm. or more in any two leads except leads III or aVR or V_1 or V_2 ; or

5. Inversion of T wave to 1.0 mm. or more in any of leads I, II, aVL, V_2 to V_6 and R wave of 5.0 mm. or more in lead aVL and R wave greater than S wave in lead aVF; or

6. "Double" Master Two-Step test demonstrating one of the following:

a. Ischemic depression of ST segment to more than 0.5 mm. lasting for at least 0.08 second beyond the J junction and clearly discernible in at least two consecutive complexes which are on a level baseline in any lead; or

b. Development of a second or third degree heart block; or

7. Angiographic evidence (see 4.00H) (obtained independent of Social Security disability evaluation) showing one of the following:

a. 50 percent or more narrowing of the left main coronary artery; or

b. 70 percent or more narrowing of a proximal coronary artery (see 4.00H3) (excluding the left main coronary artery); or

c. 50 percent or more narrowing involving a long (greater than 1 cm.) segment of a proximal coronary artery or multiple proximal coronary arteries; or

8. Akinetic or hypokinetic myocardial wall or septal motion with left ventricular ejection fraction of 30 percent or less measured by contrast or radio-isotopic ventriculographic methods; or

C. Resting ECG findings showing left bundle branch block as evidenced by QRS duration of 0.12 second or more in leads I, II, or III and R peak duration of 0.06 second or more in leads I, aVL, V_5 , or V_6 , unless there is a coronary angiogram of record which is negative (see criteria in 4.04B7).

4.05 *Recurrent arrhythmias* (not due to digitalis toxicity) resulting in uncontrolled repeated episodes of cardiac syncope and documented by resting or ambulatory (Holter) electrocardiography.

4.09 *Myocardioopathies, rheumatic or syphilitic heart disease.* Evaluate under the criteria in 4.02, 4.04, 4.05, or 11.04.

4.11 *Aneurysm of aorta or major branches* (demonstrated by roentgenographic evidence). With:

A. Acute or chronic dissection not controlled by prescribed medical or surgical treatment; or

B. Congestive heart failure as described under the criteria in 4.02; or

C. Renal failure as described under the criteria in 6.02; or

D. Repeated syncopal episodes.

4.12 *Chronic venous insufficiency* of the lower extremity with incompetency or obstruction of the deep venous return, associated with superficial varicosities, extensive brawny edema, stasis dermatitis, and recurrent or persistent ulceration which has not healed following at least 3 months of prescribed medical or surgical therapy.

4.13 *Peripheral arterial disease.* With:

A. Intermittent claudication with failure to visualize (on arteriogram obtained independent of Social Security disability evaluation) the common femoral or deep femoral artery in one extremity; or

B. Intermittent claudication with marked impairment of peripheral arterial circulation as determined by Doppler studies showing:

1. Resting ankle/brachial systolic blood pressure ratio of less than 0.50; or

2. Decrease in systolic blood pressure at ankle or exercise (see 4.00K) to 50 percent or more of preexercise level and requiring 10 minutes or more to return to preexercise level; or

C. Amputation at or above the tarsal region due to peripheral arterial disease.

5.00 DIGESTIVE SYSTEM

A. *Disorders of the digestive system* which result in a marked impairment usually do so because of interference with nutrition, multiple recurrent inflammatory lesions, or complications of disease, such as fistulae, abscesses, or recurrent obstruction. Such complications usually respond to treatment. These complications must be shown to persist on repeated examinations despite therapy for a reasonable presumption to be made that a marked impairment will last for a continuous period of at least 12 months.

B. *Malnutrition or weight loss from gastrointestinal disorders.* When the primary disorder of the digestive tract has been established (e.g. enterocolitis, chronic pancreatitis, postgastrointestinal resection, or esophageal stricture, stenosis, or obstruction), the resultant interference with nutrition will be considered under the criteria in 5.08. This will apply whether the weight loss is due to primary or secondary disorders of malabsorption, malassimilation or obstruction. However, weight loss not due to diseases of the digestive tract, but associated with psychiatric or primary endocrine or other disorders, should be evaluated under the appropriate criteria for the underlying disorder.

C. *Surgical diversion of the intestinal tract,* including colostomy or ileostomy, are not listed since they do not represent impairments which preclude all work activity if the individual is able to maintain adequate nutrition and function of the stoma. Dumping syndrome which may follow gastric resection rarely represents a marked impairment which would continue for 12 months. Peptic ulcer disease with recurrent ulceration after definitive surgery ordinarily responds to treatment. A recurrent ulcer after definitive surgery must be demonstrated on repeated upper gastrointestinal roentgenograms or gastroscopic examinations despite therapy to be considered a severe impairment which will last for at least 12 months. Definitive surgical procedures are those designed to control the ulcer disease process (i.e., vagot-

omy and pyloroplasty, subtotal gastrectomy, etc.). Simple closure of a perforated ulcer does not constitute definitive surgical therapy for peptic ulcer disease.

5.01 *Category of Impairments, Digestive System*

5.02 *Recurrent upper gastrointestinal hemorrhage from undetermined cause* with anemia manifested by hematocrit of 30 percent or less on repeated examinations.

5.03 *Stricture, stenosis, or obstruction of the esophagus (demonstrated by X-ray or endoscopy)* with weight loss as described under §5.08.

5.04 *Peptic ulcer disease (demonstrated by X-ray or endoscopy).* With:

A. Recurrent ulceration after definitive surgery persistent despite therapy; or

B. Inoperable fistula formation; or

C. Recurrent obstruction demonstrated by X-ray or endoscopy. or

D. Weight loss as described under §5.08.

5.05 *Chronic liver disease (e.g., portal, postnecrotic, or biliary cirrhosis; chronic active hepatitis; Wilson's disease).* With:

A. Esophageal varices (demonstrated by X-ray or endoscopy) with a documented history of massive hemorrhage attributable to these varices. Consider under a disability for 3 years following the last massive hemorrhage; thereafter, evaluate the residual impairment; or

B. Performance of a shunt operation for esophageal varices. Consider under a disability for 3 years following surgery; thereafter, evaluate the residual impairment; or

C. Serum bilirubin of 2.5 mg. per deciliter (100 ml.) or greater persisting on repeated examinations for at least 5 months; or

D. Ascites, not attributable to other causes, recurrent or persisting for at least 5 months, demonstrated by abdominal paracentesis or associated with persistent hypoalbuminemia of 3.0 gm. per deciliter (100 ml.) or less; or

E. Hepatic encephalopathy. Evaluate under the criteria in listing 12.02; or

F. Confirmation of chronic liver disease by liver biopsy (obtained independent of Social Security disability evaluation) and one of the following:

1. Ascites not attributable to other causes, recurrent or persisting for at least 3 months, demonstrated by abdominal paracentesis or associated with persistent hypoalbuminemia of 3.0 gm. per deciliter (100 ml.) or less; or

2. Serum bilirubin of 2.5 mg. per deciliter (100 ml) or greater on repeated examinations for at least 3 months; or

3. Hepatic cell necrosis or inflammation, persisting for at least 3 months, documented by repeated abnormalities of prothrombin time and enzymes indicative of hepatic dysfunction.

5.06 *Chronic ulcerative or granulomatous colitis (demonstrated by endoscopy, barium enema, biopsy, or operative findings).* With:

A. Recurrent bloody stools documented on repeated examinations and anemia manifested by hematocrit of 30 percent or less on repeated examinations; or

B. Persistent or recurrent systemic manifestations, such as arthritis, iritis, fever, or liver dysfunction, not attributable to other causes; or

C. Intermittent obstruction due to intractable abscess, fistula formation, or stenosis; or

D. Recurrence of findings of A, B, or C above after total colectomy; or

E. Weight loss as described under § 5.08.

5.07 *Regional enteritis (demonstrated by operative findings, barium studies, biopsy, or endoscopy)*. With:

A. Persistent or recurrent intestinal obstruction evidenced by abdominal pain, distention, nausea, and vomiting and accompanied by stenotic areas of small bowel with proximal intestinal dilation; or

B. Persistent or recurrent systemic manifestations such as arthritis, iritis, fever, or liver dysfunction, not attributable to other causes; or

C. Intermittent obstruction due to intractable abscess or fistula formation; or

D. Weight loss as described under § 5.08.

5.08 *Weight loss due to any persisting gastrointestinal disorder*: (The following weights are to be demonstrated to have persisted for at least 3 months despite prescribed therapy and expected to persist at this level for at least 12 months.) With:

A. Weight equal to or less than the values specified in Table I or II; or

B. Weight equal to or less than the values specified in Table III or IV and one of the following abnormal findings on repeated examinations:

1. Serum albumin of 3.0 gm. per deciliter (100 ml.) or less; or

2. Hematocrit of 30 percent or less; or

3. Serum calcium of 8.0 mg. per deciliter (100 ml.) (4.0 mEq./L) or less; or

4. Uncontrolled diabetes mellitus due to pancreatic dysfunction with repeated hyperglycemia, hypoglycemia, or ketosis; or

5. Fat in stool of 7 gm. or greater per 24-hour stool specimen; or

6. Nitrogen in stool of 3 gm. or greater per 24-hour specimen; or

7. Persistent or recurrent ascites or edema not attributable to other causes.

Tables of weight reflecting malnutrition scaled according to height and sex—To be used only in connection with 5.08.

TABLE I—MEN

Height (inches) ¹	Weight (pounds)
61	90
62	92
63	94
64	97

TABLE I—MEN—Continued

Height (inches) ¹	Weight (pounds)
65	99
66	102
67	106
68	109
69	112
70	115
71	118
72	122
73	125
74	128
75	131
76	134

¹ Height measured without shoes.

TABLE II—WOMEN

Height (inches) ¹	Weight (pounds)
58	77
59	79
60	82
61	84
62	86
63	89
64	91
65	94
66	98
67	101
68	104
69	107
70	110
71	114
72	117
73	120

¹ Height measured without shoes.

TABLE III—MEN

Height (inches) ¹	Weight (pounds)
61	95
62	98
63	100
64	103
65	106
66	109
67	112
68	116
69	119
70	122
71	126
72	129
73	133
74	136
75	139
76	143

¹ Height measured without shoes.

TABLE IV—WOMEN

Height (inches) ¹	Weight (pounds)
58	82
59	84
60	87
61	89

TABLE IV—WOMEN—Continued

Height (inches) ¹	Weight (pounds)
62	92
63	94
64	97
65	100
66	104
67	107
68	111
69	114
70	117
71	121
72	124
73	128

¹ Height measured without shoes.

6.00 GENITO-URINARY SYSTEM

A. *Determination of the presence of chronic renal disease will be based upon* (1) a history, physical examination, and laboratory evidence of renal disease, and (2) indications of its progressive nature or laboratory evidence of deterioration of renal function.

B. *Nephrotic Syndrome.* The medical evidence establishing the clinical diagnosis must include the description of extent of tissue edema, including pretibial, periorbital, or presacral edema. The presence of ascites, pleural effusion, pericardial effusion, and hydroarthrosis should be described if present. Results of pertinent laboratory tests must be provided. If a renal biopsy has been performed, the evidence should include a copy of the report of microscopic examination of the specimen. Complications such as severe orthostatic hypotension, recurrent infections or venous thromboses should be evaluated on the basis of resultant impairment.

C. *Hemodialysis, peritoneal dialysis, and kidney transplantation.* When an individual is undergoing periodic dialysis because of chronic renal disease, severity of impairment is reflected by the renal function prior to the institution of dialysis.

The amount of function restored and the time required to effect improvement in an individual treated by renal transplant depend upon various factors, including adequacy of post transplant renal function, incidence and severity of renal infection, occurrence of rejection crisis, the presence of systemic complications (anemia, neuropathy, etc.) and side effects of corticosteroids or immuno-suppressive agents. A convalescent period of at least 12 months is required before it can be reasonably determined whether the individual has reached a point of stable medical improvement.

D. *Evaluate associated disorders and complications* according to the appropriate body system Listing.

6.01 Category of Impairments, Genito-Urinary System

6.02 Impairment of renal function, due to any chronic renal disease expected to last 12 months (e.g., hypertensive vascular disease, chronic nephritis, nephrolithiasis, polycystic disease, bilateral hydronephrosis, etc.) With:

A. Chronic hemodialysis or peritoneal dialysis necessitated by irreversible renal failure; or

B. Kidney transplant. Consider under a disability for 12 months following surgery; thereafter, evaluate the residual impairment (see 6.00C); or

C. Persistent elevation of serum creatine in to 4 mg. per deciliter (100 ml.) or greater or reduction of creatinine clearance to 20 ml. per minute (29 liters/24 hours) or less, over at least 3 months, with one of the following:

1. Renal osteodystrophy manifested by severe bone pain and appropriate radiographic abnormalities (e.g., osteitis fibrosa, marked osteoporosis, pathologic fractures); or

2. A clinical episode of pericarditis; or

3. Persistent motor or sensory neuropathy; or

4. Intractable pruritus; or

5. Persistent fluid overload syndrome resulting in diastolic hypertension (110 mm. or above) or signs of vascular congestion; or

6. Persistent anorexia with recent weight loss and current weight meeting the values in 5.08, Table III or IV; or

7. Persistent hematocrits of 30 percent or less.

6.06 *Nephrotic syndrome, with significant anasarca, persistent for at least 3 months despite prescribed therapy.* With:

A. Serum albumin of 3.0 gm. per deciliter (100 ml.) or less and proteinuria of 3.5 gm. per 24 hours or greater; or

B. Proteinuria of 10.0 gm. per 24 hours or greater.

7.00 HEMIC AND LYMPHATIC SYSTEM

A. *Impairment caused by anemia* should be evaluated according to the ability of the individual to adjust to the reduced oxygen carrying capacity of the blood. A gradual reduction in red cell mass, even to very low values, is often well tolerated in individuals with a healthy cardiovascular system.

B. *Chronicity is indicated by* persistence of the condition for at least 3 months. The laboratory findings cited must reflect the values reported on more than one examination over that 3-month period.

C. *Sickle cell disease* refers to a chronic hemolytic anemia associated with sickle cell hemoglobin, either homozygous or in combination with thalassemia or with another abnormal hemoglobin (such as C or F).

Appropriate hematologic evidence for sickle cell disease, such as hemoglobin electrophoresis, must be included. Vasocclusive or aplastic episodes should be documented by description of severity, frequency, and duration.

Major visceral episodes include meningitis, osteomyelitis, pulmonary infections or infarctions, cerebrovascular accidents, congestive heart failure, genito-urinary involvement, etc.

D. *Coagulation defects.* Chronic inherited coagulation disorders must be documented by appropriate laboratory evidence. Prophylactic therapy such as with antihemophilic globulin (AHG) concentrate does not in itself imply severity.

E. *Acute leukemia.* Initial diagnosis of acute leukemia must be based upon definitive bone marrow pathologic evidence. Recurrent disease may be documented by peripheral blood, bone marrow, or cerebrospinal fluid examination. The pathology report must be included.

The acute phase of chronic myelocytic (granulocytic) leukemia should be considered under the requirements for acute leukemia.

The criteria in 7.11 contain the designated duration of disability implicit in the finding of a listed impairment. Following the designated time period, a documented diagnosis itself is no longer sufficient to establish a marked impairment. The level of any remaining impairment must be evaluated on the basis of the medical evidence.

7.01 Category of Impairments, Hemic and Lymphatic System

7.02 *Chronic anemia (hematocrit persisting at 30 percent or less due to any cause).* With:

A. Requirement of one or more blood transfusions on an average of at least once every 2 months; or

B. Evaluation of the resulting impairment under criteria for the affected body system.

7.05 *Sickle cell disease, or one of its variants.* With:

A. Documented painful (thrombotic) crises occurring at least three times during the 5 months prior to adjudication; or

B. Requiring extended hospitalization (beyond emergency care) at least three times during the 12 months prior to adjudication; or

C. Chronic, severe anemia with persistence of hematocrit of 26 percent or less; or

D. Evaluate the resulting impairment under the criteria for the affected body system.

7.06 *Chronic thrombocytopenia (due to any cause)* with platelet counts repeatedly below 40,000/cubic millimeter. With:

A. At least one spontaneous hemorrhage, requiring transfusion, within 5 months prior to adjudication; or

B. Intracranial bleeding within 12 months prior to adjudication.

7.07 *Hereditary telangiectasia* with hemorrhage requiring transfusion at least three times during the 5 months prior to adjudication.

7.08 *Coagulation defects (hemophilia or a similar disorder)* with spontaneous hemor-

rhage requiring transfusion at least three times during the 5 months prior to adjudication.

7.09 *Polycythemia vera (with erythrocytosis, splenomegaly, and leukocytosis or thrombocytosis).* Evaluate the resulting impairment under the criteria for the affected body system.

7.10 *Myelofibrosis (myeloproliferative syndrome).* With:

A. Chronic anemia. Evaluate according to the criteria of §7.02; or

B. Documented recurrent systemic bacterial infections occurring at least 3 times during the 5 months prior to adjudication; or

C. Intractable bone pain with radiologic evidence of osteosclerosis.

7.11 *Acute leukemia.* Consider under a disability for 2½ years from the time of initial diagnosis.

7.12 *Chronic leukemia.* Evaluate according to the criteria of 7.02, 7.06, 7.10B, 7.11, 7.17, or 13.06A.

7.13 *Lymphomas.* Evaluate under the criteria in 13.06A.

7.14 *Macroglobulinemia or heavy chain disease,* confirmed by serum or urine protein electrophoresis or immunoelectrophoresis. Evaluate impairment under criteria for affected body system or under 7.02, 7.06, or 7.08.

7.15 *Chronic granulocytopenia (due to any cause).* With both A and B:

A. Absolute neutrophil counts repeatedly below 1,000 cells/cubic millimeter; and

B. Documented recurrent systemic bacterial infections occurring at least 3 times during the 5 months prior to adjudication.

7.16 *Myeloma (confirmed by appropriate serum or urine protein electrophoresis and bone marrow findings).* With:

A. Radiologic evidence of bony involvement with intractable bone pain; or

B. Evidence of renal impairment as described in 6.02; or

C. Hypercalcemia with serum calcium levels persistently greater than 11 mg. per deciliter (100 ml.) for at least 1 month despite prescribed therapy; or

D. Plasma cells (100 or more cells/cubic millimeter) in the peripheral blood.

7.17 *Aplastic anemias or hematologic malignancies (excluding acute leukemia):* With bone marrow transplantation. Consider under a disability for 12 months following transplantation; thereafter, evaluate according to the primary characteristics of the residual impairment.

8.00 SKIN

A. *Skin lesions* may result in a marked, long-lasting impairment if they involve extensive body areas or critical areas such as the hands or feet and become resistant to treatment. These lesions must be shown to have persisted for a sufficient period of time despite therapy for a reasonable presumption to be made that a marked impairment will

last for a continuous period of at least 12 months. The treatment for some of the skin diseases listed in this section may require the use of high dosage of drugs with possible serious side effects; these side effects should be considered in the overall evaluation of impairment.

B. *When skin lesions are associated with systemic disease* and where that is the predominant problem, evaluation should occur according to the criteria in the appropriate section. Disseminated (systemic) lupus erythematosus and scleroderma usually involve more than one body system and should be evaluated under 10.04 and 10.05. Neoplastic skin lesions should be evaluated under 13.00ff. When skin lesions (including burns) are associated with contractures or limitation of joint motion, that impairment should be evaluated under 1.00ff.

8.01 Category of Impairments, Skin

8.02 *Exfoliative dermatitis, ichthyosis, ichthyosiform erythroderma*. With extensive lesions not responding to prescribed treatment.

8.03 *Pemphigus, erythema multiforme bullosum, bullous pemphigoid, dermatitis herpetiformis*. With extensive lesions not responding to prescribed treatment.

8.04 *Deep mycotic infections. With extensive fungating, ulcerating lesions not responding to prescribed treatment*.

8.05 *Psoriasis, atopic dermatitis, dyshidrosis*. With extensive lesions, including involvement of the hands or feet which impose a marked limitation of function and which are not responding to prescribed treatment.

8.06 *Hydradenitis suppurative, acne conglobata*. With extensive lesions involving the axillae or perineum not responding to prescribed medical treatment and not amendable to surgical treatment.

9.00 ENDOCRINE SYSTEM

Cause of impairment. Impairment is caused by overproduction or underproduction of hormones, resulting in structural or functional changes in the body. Where involvement of other organ systems has occurred as a result of a primary endocrine disorder, these impairments should be evaluated according to the criteria under the appropriate sections.

9.01 Category of Impairments, Endocrine

9.02 *Thyroid Disorders*. With:

A. Progressive exophthalmos as measured by exophthalmometry; or

B. Evaluate the resulting impairment under the criteria for the affected body system.

9.03 *Hyperparathyroidism*. With:

A. Generalized decalcification of bone on X-ray study and elevation of plasma calcium to 11 mg. per deciliter (100 ml.) or greater; or

B. A resulting impairment. Evaluate according to the criteria in the affected body system.

9.04 *Hypoparathyroidism*. With:

A. Severe recurrent tetany; or

B. Recurrent generalized convulsions; or

C. Lenticular cataracts. Evaluate under the criteria in 2.00ff.

9.05 *Neurohypophyseal insufficiency (diabetes insipidus)*. With urine specific gravity of 1.005 or below, persistent for at least 3 months and recurrent dehydration.

9.06 *Hyperfunction of the adrenal cortex*. Evaluate the resulting impairment under the criteria for the affected body system.

9.08 *Diabetes mellitus*. With:

A. Neuropathy demonstrated by significant and persistent disorganization of motor function in two extremities resulting in sustained disturbance of gross and dexterous movements, or gait and station (see 11.00C); or

B. Acidosis occurring at least on the average of once every 2 months documented by appropriate blood chemical tests (pH or pCO₂ or bicarbonate levels); or

C. Amputation at, or above, the tarsal region due to diabetic necrosis or peripheral arterial disease; or

D. Retinitis proliferans; evaluate the visual impairment under the criteria in 2.02, 2.03, or 2.04.

10.00 MULTIPLE BODY SYSTEMS

A. The impairments included in this section usually involve more than a single body system.

B. Long-term obesity will usually be associated with disorders in the musculoskeletal, cardiovascular, peripheral vascular, and pulmonary systems, and the advent of such disorders is the major cause of impairment. Extreme obesity results in restrictions imposed by body weight and the additional restrictions imposed by disturbances in other body systems.

10.01 Category of Impairments, Multiple Body Systems

10.02 *Hansen's disease (leprosy)*. As active disease or consider as "under a disability" while hospitalized.

10.03 *Polyarteritis or periarteritis nodosa (established by biopsy)*. With signs of generalized arterial involvement.

10.04 *Disseminated lupus erythematosus (established by a positive LE preparation or biopsy or positive ANA test)*. With frequent exacerbations demonstrating involvement of renal or cardiac or pulmonary or gastrointestinal or central nervous systems.

10.05 *Scleroderma or progressive systemic sclerosis (the diffuse or generalized form)*. With:

A. Advanced limitation of use of hands due to sclerodactylia or limitation in other joints; or

B. Significant visceral manifestations of digestive, cardiac, or pulmonary impairment.

10.10 *Obesity*. Weight equal to or greater than the values specified in Table I for

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males, Table II for females (100 percent above desired level) and one of the following:

A. History of pain and limitation of motion in any weight bearing joint or spine (on physical examination) associated with X-ray evidence of arthritis in a weight bearing joint or spine; or

B. Hypertension with diastolic blood pressure persistently in excess of 100 mm. Hg measured with appropriate size cuff; or

C. History of congestive heart failure manifested by past evidence of vascular congestion such as hepatomegaly, peripheral or pulmonary edema; or

D. Chronic venous insufficiency with superficial varicosities in a lower extremity with pain on weight bearing and persistent edema; or

E. Respiratory disease with total forced vital capacity equal to or less than 2.0 L. or a level of hypoxemia at rest equal to or less than the values specified in Table III-A or III-B or III-C.

TABLE I—MEN

Height without shoes (inches)	Weight (pounds)
60	246
61	252
62	258
63	264
64	270
65	276
66	284
67	294
68	302
69	310
70	318
71	328
72	336
73	346
74	356
75	364
76	374

TABLE II—WOMEN

Height without shoes (inches)	Weight (pounds)
56	208
57	212
58	218
59	224
60	230
61	236
62	242
63	250
64	258
65	266
66	274
67	282
68	290
69	298
70	306
71	314
72	322

TABLE III—A

[Applicable at test sites less than 3,000 feet above sea level]

Arterial PCO ₂ (mm. Hg) and	Arterial PO ₂ equal to or less than (mm. Hg)
30 or below	65
31	64
32	63
33	62
34	61
35	60
36	59
37	58
38	57
39	56
40 or above	55

TABLE III—B

[Applicable at test sites 3,000 through 6,000 feet above sea level]

Arterial PCO ₂ (mm. Hg) and	Arterial PO ₂ equal to or less than (mm. Hg)
30 or below	60
31	59
32	58
33	57
34	56
35	55
36	54
37	53
38	52
39	51
40 or above	50

TABLE III—C

[Applicable at test sites over 6,000 feet above sea level]

Arterial PCO ₂ (mm. Hg) and	Arterial PO ₂ equal to or less than (mm. Hg)
30 or below	55
31	54
32	53
33	52
34	51
35	50
36	49
37	48
38	47
39	46
40 or above	45

11.00 NEUROLOGICAL

A. *Convulsive disorders.* In convulsive disorders, regardless of etiology degree of impairment will be determined according to type, frequency, duration, and sequelae of seizures. At least one detailed description of a typical seizure is required. Such

descripition includes the presence or absence of aura, tongue bites, sphincter control, injuries associated with the attack, and postictal phenomena. The reporting physician should indicate the extent to which description of seizures reflects his own observations and the source of ancillary information. Testimony of persons other than the claimant is essential for description of type and frequency of seizures if professional observation is not available.

Documentation of epilepsy should include at least one electroneuroencephalogram (EEG).

Under 11.02 and 11.03, the criteria can be applied only if the impairment persists despite the fact that the individual is following prescribed anticonvulsive treatment. Adherence to prescribed anticonvulsive therapy can ordinarily be determined from objective clinical findings in the report of the physician currently providing treatment for epilepsy. Determination of blood levels of phenytoin sodium or other anticonvulsive drugs may serve to indicate whether the prescribed medication is being taken. When seizures are occurring at the frequency stated in 11.02 or 11.03, evaluation of the severity of the impairment must include consideration of the serum drug levels. Should serum drug levels appear therapeutically inadequate, consideration should be given as to whether this is caused by individual idiosyncrasy in absorption of metabolism of the drug. Blood drug levels should be evaluated in conjunction with all the other evidence to determine the extent of compliance. When the reported blood drug levels are low, therefore, the information obtained from the treating source should include the physician's statement as to why the levels are low and the results of any relevant diagnostic studies concerning the blood levels. Where adequate seizure control is obtained only with unusually large doses, the possibility of impairment resulting from the side effects of this medication must be also assessed. Where documentation shows that use of alcohol or drugs affects adherence to prescribed therapy or may play a part in the precipitation of seizures, this must also be considered in the overall assessment of impairment level.

B. Brain tumors. The diagnosis of malignant brain tumors must be established, and the persistence of the tumor should be evaluated, under the criteria described in 13.00B and C for neoplastic disease.

In histologically malignant tumors, the pathological diagnosis alone will be the decisive criterion for severity and expected duration (see 11.05A). For other tumors of the brain, the severity and duration of the impairment will be determined on the basis of symptoms, signs, and pertinent laboratory findings (11.05B).

C. Persistent disorganization of motor function in the form of paresis or paralysis, tremor or other involuntary movements, ataxia

and sensory disturbances (any or all of which may be due to cerebral cerebellar, brain stem, spinal cord, or peripheral nerve dysfunction) which occur singly or in various combination, frequently provides the sole or partial basis for decision in cases of neurological impairment. The assessment of impairment depends on the degree of interference with locomotion and/or interference with the use of fingers, hands, and arms.

D. In conditions which are episodic in character, such as multiple sclerosis or myasthenia gravis, consideration should be given to frequency and duration of exacerbations, length of remissions, and permanent residuals.

E. Multiple sclerosis. The major criteria for evaluating impairment caused by multiple sclerosis are discussed in listing 11.09. Paragraph A provides criteria for evaluating disorganization of motor function and gives reference to 11.04B (11.04B then refers to 11.00C). Paragraph B provides references to other listings for evaluating visual or mental impairments caused by multiple sclerosis. Paragraph C provides criteria for evaluating the impairment of individuals who do not have muscle weakness or other significant disorganization of motor function at rest, but who do develop muscle weakness on activity as a result of fatigue.

Use of the criteria in 11.09C is dependent upon (1) documenting a diagnosis of multiple sclerosis, (2) obtaining a description of fatigue considered to be characteristic of multiple sclerosis, and (3) obtaining evidence that the system has actually become fatigued. The evaluation of the magnitude of the impairment must consider the degree of exercise and the severity of the resulting muscle weakness.

The criteria in 11.09C deals with motor abnormalities which occur on activity. If the disorganization of motor function is present at rest, paragraph A must be used, taking into account any further increase in muscle weakness resulting from activity.

Sensory abnormalities may occur, particularly involving central visual acuity. The decrease in visual acuity may occur after brief attempts at activity involving near vision, such as reading. This decrease in visual acuity may not persist when the specific activity is terminated, as with rest, but is predictably reproduced with resumption of the activity. The impairment of central visual acuity in these cases should be evaluated under the criteria in listing 2.02, taking into account the fact that the decrease in visual acuity will wax and wane.

Clarification of the evidence regarding central nervous system dysfunction responsible for the symptoms may require supporting technical evidence of functional impairment such as evoked response tests during exercise.

11.01 Category of Impairments, Neurological

11.02 *Epilepsy—major motor seizures, (grand mal or psychomotor), documented by EEG and by detailed description of a typical seizure pattern, including all associated phenomena; occurring more frequently than once a month, in spite of at least 3 months of prescribed treatment.* With:

A. Daytime episodes (loss of consciousness and convulsive seizures) or

B. Nocturnal episodes manifesting residuals which interfere significantly with activity during the day.

11.03 *Epilepsy—Minor motor seizures (petit mal, psychomotor, or focal), documented by EEG and by detailed description of a typical seizure pattern, including all associated phenomena; occurring more frequently than once weekly in spite of at least 3 months of prescribed treatment.* With alteration of awareness or loss of consciousness and transient postictal manifestations of unconventional behavior or significant interference with activity during the day.

11.04 *Central nervous system vascular accident.* With one of the following more than 3 months post-vascular accident:

A. Sensory or motor aphasia resulting in ineffective speech or communication; or

B. Significant and persistent disorganization of motor function in two extremities, resulting in sustained disturbance of gross and dexterous movements, or gait and station (see 11.00C).

11.05 *Brain tumors.*

A. Malignant gliomas (astrocytoma—grades III and IV, glioblastoma multiforme), medulloblastoma, ependymoblastoma, or primary sarcoma; or

B. Astrocytoma (grades I and II), meningioma, pituitary tumors, oligodendroglioma, ependymoma, clivus chordoma, and benign tumors. Evaluate under 11.02, 11.03, 11.04 A, or B, or 12.02.

11.06 *Parkinsonian syndrome* with the following signs: Significant rigidity, bradykinesia, or tremor in two extremities, which, singly or in combination, result in sustained disturbance of gross and dexterous movements, or gait and station.

11.07 *Cerebral palsy.* With:

A. IQ of 69 or less; or

B. Abnormal behavior patterns, such as destructiveness or emotional instability; or

C. Significant interference in communication due to speech, hearing, or visual defect; or

D. Disorganization of motor function as described in 11.04B.

11.08 *Spinal cord or nerve root lesions, due to any cause with disorganization of motor function as described in 11.04B.*

11.09 *Multiple sclerosis.* With:

A. Disorganization of motor function as described in 11.04B; or

B. Visual or mental impairment as described under the criteria in 2.02, 2.03, 2.04, or 12.02; or

C. Significant, reproducible fatigue of motor function with substantial muscle weakness on repetitive activity, demonstrated on physical examination, resulting from neurological dysfunction in areas of the central nervous system known to be pathologically involved by the multiple sclerosis process.

11.10 *Amyotrophic lateral sclerosis.* With:

A. Significant bulbar signs; or

B. Disorganization of motor function as described in 11.04B.

11.11 *Anterior poliomyelitis.* With:

A. Persistent difficulty with swallowing or breathing; or

B. Unintelligible speech; or

C. Disorganization of motor function as described in 11.04B.

11.12 *Myasthenia gravis.* With:

A. Significant difficulty with speaking, swallowing, or breathing while on prescribed therapy; or

B. Significant motor weakness of muscles of extremities on repetitive activity against resistance while on prescribed therapy.

11.13 *Muscular dystrophy* with disorganization of motor function as described in 11.04B.

11.14 *Peripheral neuropathies.*

With disorganization of motor function as described in 11.04B, in spite of prescribed treatment.

11.15 *Tabes dorsalis.*

With:

A. Tabetic crises occurring more frequently than once monthly; or

B. Unsteady, broad-based or ataxic gait causing significant restriction of mobility substantiated by appropriate posterior column signs.

11.16 *Subacute combined cord degeneration (pernicious anemia) with disorganization of motor function as described in 11.04B or 11.15B, not significantly improved by prescribed treatment.*

11.17 *Degenerative disease not elsewhere such as Huntington's chorea, Friedreich's ataxia, and spino-cerebellar degeneration.* With:

A. Disorganization of motor function as described in 11.04B or 11.15B; or

B. Chronic brain syndrome. Evaluate under 12.02.

11.18 *Cerebral trauma:*

Evaluate under the provisions of 11.02, 11.03, 11.04 and 12.02, as applicable.

11.19 *Syringomyelia.*

With:

A. Significant bulbar signs; or

B. Disorganization of motor function as described in 11.04B.

12.00 MENTAL DISORDERS

The mental disorders listings in 12.00 of the Listing of Impairments will no longer be effective on August 28, 1991, unless extended by the Board or revised and promulgated again.

A. *Introduction:* The evaluation of disability on the basis of mental disorders requires the documentation of a medically determinable impairment(s) as well as consideration of the degree of limitation such impairment(s) may impose on the individual's ability to work and whether these limitations have lasted or are expected to last for a continuous period of at least 12 months. The listings for mental disorders are arranged in eight diagnostic categories: organic mental disorders (12.02); schizophrenic, paranoid and other psychotic disorders (12.03); affective disorders (12.04); mental retardation and autism (12.05); anxiety related disorders (12.06); somatoform disorders (12.07); personality disorders (12.08); and substance addiction disorders (12.09). Each diagnostic group, except listings 12.05 and 12.09, consists of a set of clinical findings (paragraph A criteria), one or more of which must be met, and which, if met, lead to a test of functional restrictions (paragraph B criteria), two or three of which must also be met. There are additional considerations (paragraph C criteria) in listings 12.03 and 12.06, discussed therein.

The purpose of including the criteria in paragraph A of the listings for mental disorders is to medically substantiate the presence of a mental disorder. Specific signs and symptoms under any of the listings 12.02 through 12.09 cannot be considered in isolation from the description of the mental disorder contained at the beginning of each listing category. Impairments should be analyzed or reviewed under the mental category(ies) which is supported by the individual's clinical findings.

The purpose of including the criteria in paragraphs B and C of the listings for mental disorders is to describe those functional limitations associated with mental disorders which are incompatible with the ability to work. The restrictions listed in paragraphs B and C must be the result of the mental disorder which is manifested by the clinical findings outlined in paragraph A. The criteria included in paragraphs B and C of the listings for mental disorders have been chosen because they represent functional areas deemed essential to work. An individual who is severely limited in these areas as the result of an impairment identified in paragraph A is presumed to be unable to work.

The structure of the listing for substance addiction disorders, listing 12.09, is different from that for the other mental disorder listings. Listing 12.09 is structured as a reference listing; that is, it will only serve to indicate which of the other listed mental or

physical impairments must be used to evaluate the behavioral or physical changes resulting from regular use of addictive substances.

The listings for mental disorders are so constructed that an individual meeting or equalling the criteria could not reasonably be expected to engage in gainful work activity.

Individuals who have an impairment with a level of severity which does not meet the criteria of the listings for mental disorders may or may not have the residual functional capacity (RFC) which would enable them to engage in substantial gainful work activity. The determination of mental RFC is crucial to the evaluation of an individual's capacity to engage in substantial gainful work activity when the criteria of the listings for mental disorders are not met or equaled but the impairment is nevertheless severe.

RFC may be defined as a multidimensional description of the work-related abilities which an individual retains in spite of medical impairments. RFC complements the criteria in paragraphs B and C of the listings for mental disorders by requiring consideration of an expanded list of work-related capacities which may be impaired by mental disorder when the impairment is severe but does not meet or equal a listed mental disorder. (While RFC may be applicable in most claims, the law specifies that it does not apply to the following special claims categories: disabled title XVI children below age 18, widows, widowers and surviving divorced wives. The impairment(s) of these categories must meet or equal a listed impairment for the individual to be eligible for benefits based on disability.)

B. *Need for Medical Evidence:* The existence of a medically determinable impairment of the required duration must be established by medical evidence consisting of clinical signs, symptoms and/or laboratory or psychological test findings. These findings may be intermittent or persistent depending on the nature of the disorder. Clinical signs are medically demonstrable phenomena which reflect specific abnormalities of behavior, affect, thought, memory, orientation, or contact with reality. These signs are typically assessed by a psychiatrist or psychologist and/or documented by psychological tests. Symptoms are complaints presented by the individual. Signs and symptoms generally cluster together to constitute recognizable clinical syndromes (mental disorders). Both symptoms and signs which are part of any diagnosed mental disorder must be considered in evaluating severity.

C. *Assessment of Severity:* For mental disorders, severity is assessed in terms of the functional limitations imposed by the impairment. Functional limitations are assessed using the criteria in paragraph B of

the listings for mental disorders (descriptions of restrictions of activities of daily living; social functioning; concentration, persistence, or pace; and ability to tolerate increased mental demands associated with competitive work). Where "marked" is used as a standard for measuring the degree of limitation, it means more than moderate, but less than extreme. A marked limitation may arise when several activities or functions are impaired or even when only one is impaired, so long as the degree of limitation is such as to seriously interfere with the ability to function independently, appropriately and effectively. Four areas are considered.

1. *Activities of daily living* include adaptive activities such as cleaning, shopping, cooking, taking public transportation, paying bills, maintaining a residence, caring appropriately for one's grooming and hygiene, using telephones and directories, using a post office, etc. In the context of the individual's overall situation, the quality of these activities is judged by their independence, appropriateness and effectiveness. It is necessary to define the extent to which the individual is capable of initiating and participating in activities independent of supervision or direction.

"Marked" is not the number of activities which are restricted but the overall degree of restriction or combination of restrictions which must be judged. For example, a person who is able to cook and clean might still have marked restrictions of daily activities if the person were too fearful to leave the immediate environment of home and neighborhood, hampering the person's ability to obtain treatment or to travel away from the immediate living environment.

2. *Social functioning* refers to an individual's capacity to interact appropriately and communicate effectively with other individuals. Social functioning includes the ability to get along with others, e.g., family members, friends, neighbors, grocery clerks, landlords, bus drivers, etc. Impaired social functioning may be demonstrated by a history of altercations, evictions, firings, fear of strangers, avoidance of interpersonal relationships, social isolation, etc. Strength in social functioning may be documented by an individual's ability to initiate social contacts with others, communicate clearly with others, interact and actively participate in group activities, etc. Cooperative behaviors, consideration for others, awareness of others' feelings, and social maturity also need to be considered. Social functioning in work situations may involve interactions with the public, responding appropriately to persons in authority, e.g., supervisors, or cooperative behaviors involving coworkers.

"Marked" is not the number of areas in which social functioning is impaired, but the overall degree of interference in a particular

area or combination of areas of functioning. For example, a person who is highly antagonistic, uncooperative or hostile but is tolerated by local storekeepers may nevertheless have marked restrictions in social functioning because that behavior is not acceptable in other social contexts.

3. *Concentration, persistence and pace* refer to the ability to sustain focused attention sufficiently long to permit the timely completion of tasks commonly found in work settings. In activities of daily living, concentration may be reflected in terms of ability to complete tasks in everyday household routines. Deficiencies in concentration, persistence and pace are best observed in work and work-like settings. Major impairment in this area can often be assessed through direct psychiatric examination and/or psychological testing, although mental status examination or psychological test data alone should not be used to accurately describe concentration and sustained ability to adequately perform work-like tasks. On mental status examinations, concentration is assessed by tasks such as having the individual subtract serial sevens from 100. In psychological tests of intelligence or memory, concentration is assessed through tasks requiring short-term memory or through tasks that must be completed within established time limits. In work evaluations, concentration, persistence, and pace are assessed through such tasks as filing index cards, locating telephone numbers, or disassembling and reassembling objects. Strengths and weaknesses in areas of concentration can be discussed in terms of frequency of errors, time it takes to complete the task, and extent to which assistance is required to complete the task.

4. *Deterioration or decompensation in work or work-like settings* refers to repeated failure to adapt to stressful circumstances which cause the individual either to withdraw from that situation or to experience exacerbation of signs and symptoms (i.e., decompensation) with an accompanying difficulty in maintaining activities of daily living, social relationships, and/or maintaining concentration, persistence, or pace (i.e., deterioration which may include deterioration of adaptive behaviors). Stresses common to the work environment include decisions, attendance, schedules, completing tasks, interactions with supervisors, interactions with peers, etc.

D. *Documentation*: The presence of a mental disorder should be documented primarily on the basis of reports from individual providers, such as psychiatrists and psychologists, and facilities such as hospitals and clinics. Adequate descriptions of functional limitations must be obtained from these or other sources which may include programs and facilities where the individual has been observed over a considerable period of time.

Information from both medical and non-medical sources may be used to obtain detailed descriptions of the individual's activities of daily living; social functioning; concentration, persistence and pace; or ability to tolerate increased mental demands (stress). This information can be provided by programs such as community mental health centers, day care centers, sheltered workshops, etc. It can also be provided by others, including family members, who have knowledge of the individual's functioning. In some cases descriptions of activities of daily living or social functioning given by individuals or treating sources may be insufficiently detailed and/or may be in conflict with the clinical picture otherwise observed or described in the examinations or reports. It is necessary to resolve any inconsistencies or gaps that may exist in order to obtain a proper understanding of the individual's functional restrictions.

An individual's level of functioning may vary considerably over time. The level of functioning at a specific time may seem relatively adequate or, conversely, rather poor. Proper evaluation of the impairment must take any variations in level of functioning into account in arriving at a determination of impairment severity over time. Thus, it is vital to obtain evidence from relevant sources over a sufficiently long period prior to the date of adjudication in order to establish the individual's impairment severity. This evidence should include treatment notes, hospital discharge summaries, and work evaluation or rehabilitation progress notes if these are available.

Some individuals may have attempted to work or may actually have worked during the period of time pertinent to the determination of disability. This may have been an independent attempt at work, or it may have been in conjunction with a community mental health or other sheltered program which may have been of either short or long duration. Information concerning the individual's behavior during any attempt to work and the circumstances surrounding termination of the work effort are particularly useful in determining the individual's ability or inability to function in a work setting.

The results of well-standardized psychological tests such as the Wechsler Adult Intelligence Scale (WAIS), the Minnesota Multiphasic Personality Inventory (MMPI), the Rorschach, and the Thematic Apperception Test (TAT), may be useful in establishing the existence of a mental disorder. For example, the WAIS is useful in establishing mental retardation, and the MMPI, Rorschach, and TAT may provide data supporting several other diagnoses. Broad-based neuropsychological assessments using, for example, the Halstead-Reitan or the Luria-Nebraska batteries may be useful in determining brain function deficiencies, particu-

larly in cases involving subtle findings such as may be seen in traumatic brain injury. In addition, the process of taking a standardized test requires concentration, persistence and pace; performance on such tests may provide useful data. Test results should, therefore, include both the objective data and a narrative description of clinical findings. Narrative reports of intellectual assessment should include a discussion of whether or not obtained IQ scores are considered valid and consistent with the individual's developmental history and degree of functional restriction.

In cases involving impaired intellectual functioning, a standardized intelligence test, e.g., the WAIS, should be administered and interpreted by a psychologist or psychiatrist qualified by training and experience to perform such an evaluation. In special circumstances, nonverbal measures, such as the Raven Progressive Matrices, the Leiter international scale, or the Arthur adaptation of the Leiter may be substituted.

Identical IQ scores obtained from different tests do not always reflect a similar degree of intellectual functioning. In this connection, it must be noted that on the WAIS, for example, IQs of 69 and below are characteristic of approximately the lowest 2 percent of the general population. In instances where other tests are administered, it would be necessary to convert the IQ to the corresponding percentile rank in the general population in order to determine the actual degree of impairment reflected by those IQ scores.

In cases where more than one IQ is customarily derived from the test administered, i.e., where verbal, performance, and full-scale IQs are provided as on the WAIS, the lowest of these is used in conjunction with listing 12.05.

In cases where the nature of the individual's intellectual impairment is such that standard intelligence tests, as described above, are precluded, medical reports specifically describing the level of intellectual, social, and physical function should be obtained. Actual observations by Social Security Administration or State agency personnel, reports from educational institutions and information furnished by public welfare agencies or other reliable objective sources should be considered as additional evidence.

E. Chronic Mental Impairments: Particular problems are often involved in evaluating mental impairments in individuals who have long histories of repeated hospitalizations or prolonged outpatient care with supportive therapy and medication. Individuals with chronic psychotic disorders commonly have their lives structured in such a way as to minimize stress and reduce their signs and symptoms. Such individuals may be much more impaired for work than their signs and symptoms would indicate. The results of a

single examination may not adequately describe these individuals' sustained ability to function. It is, therefore, vital to review all pertinent information relative to the individual's condition, especially at times of increased stress. It is mandatory to attempt to obtain adequate descriptive information from all sources which have treated the individual either currently or in the time period relevant to the decision.

F. *Effects of Structured Settings:* Particularly in cases involving chronic mental disorders, overt symptomatology may be controlled or attenuated by psychosocial factors such as placement in a hospital, board and care facility, or other environment that provides similar structure. Highly structured and supportive settings may greatly reduce the mental demands placed on an individual. With lowered mental demands, overt signs and symptoms of the underlying mental disorder may be minimized. At the same time, however, the individual's ability to function outside of such a structured and/or supportive setting may not have changed. An evaluation of individuals whose symptomatology is controlled or attenuated by psychosocial factors must consider the ability of the individual to function outside of such highly structured settings. (For these reasons the paragraph C criteria were added to Listings 12.03 and 12.06.)

G. *Effects of Medication:* Attention must be given to the effect of medication on the individual's signs, symptoms and ability to function. While psychotropic medications may control certain primary manifestations of a mental disorder, e.g., hallucinations, such treatment may or may not affect the functional limitations imposed by the mental disorder. In cases where overt symptomatology is attenuated by the psychotropic medications, particular attention must be focused on the functional restrictions which may persist. These functional restrictions are also to be used as the measure of impairment severity. (See the paragraph C criteria in Listings 12.03 and 12.06.)

Neuroleptics, the medicines used in the treatment of some mental illnesses, may cause drowsiness, blunted affect, or other side effects involving other body systems. Such side effects must be considered in evaluating overall impairment severity. Where adverse effects of medications contribute to the impairment severity and the impairment does not meet or equal the listings but is nonetheless severe, such adverse effects must be considered in the assessment of the mental residual functional capacity.

H. *Effect of Treatment:* It must be remembered that with adequate treatment some individuals suffering with chronic mental disorders not only have their symptoms and signs ameliorated but also return to a level of function close to that of their premorbid status. Our discussion here in 12.00H has been

designed to reflect the fact that present day treatment of a mentally impaired individual may or may not assist in the achievement of an adequate level of adaptation required in the work place. (See the paragraph C criteria in Listings 12.03 and 12.06.)

I. *Technique for Reviewing the Evidence in Mental Disorders Claims to Determine Level of Impairment Severity:* A special technique has been developed to ensure that all evidence needed for the evaluation of impairment severity in claims involving mental impairment is obtained, considered and properly evaluated. This technique, which is used in connection with the sequential evaluation process, is explained in §404.1520a and §416.920a.

12.01 Category of Impairments-Mental

12.02 *Organic Mental Disorders:* Psychological or behavioral abnormalities associated with a dysfunction of the brain. History and physical examination or laboratory tests demonstrate the presence of a specific organic factor judged to be etiologically related to the abnormal mental state and loss of previously acquired functional abilities.

The required level of severity for these disorders is met when the requirements in both A and B are satisfied.

A. Demonstration of a loss of specific cognitive abilities or affective changes and the medically documented persistence of at least one of the following:

1. Disorientation to time and place; or
 2. Memory impairment, either short-term (inability to learn new information), intermediate, or long-term (inability to remember information that was known sometime in the past); or
 3. Perceptual or thinking disturbances (e.g., hallucinations, delusions); or
 4. Change in personality; or
 5. Disturbance in mood; or
 6. Emotional lability (e.g., explosive temper outbursts, sudden crying, etc.) and impairment in impulse control; or
 7. Loss of measured intellectual ability of at least 15 I.Q. points from premorbid levels or overall impairment index clearly within the severely impaired range on neuropsychological testing, e.g., the Luria-Nebraska, Halstead-Reitan, etc.;
- AND

B. Resulting in at least two of the following:

1. Marked restriction of activities of daily living; or
2. Marked difficulties in maintaining social functioning; or
3. Deficiencies of concentration, persistence or pace resulting in frequent failure to complete tasks in a timely manner (in work settings or elsewhere); or
4. Repeated episodes of deterioration or decompensation in work or work-like settings which cause the individual to withdraw from that situation or to experience exacerbation

of signs and symptoms (which may include deterioration of adaptive behaviors).

12.03 *Schizophrenic, Paranoid and Other Psychotic Disorders*: Characterized by the onset of psychotic features with deterioration from a previous level of functioning.

The required level of severity for these disorders is met when the requirements in both A and B are satisfied, or when the requirements in C are satisfied.

A. Medically documented persistence, either continuous or intermittent, of one or more of the following:

1. Delusions or hallucinations; or
2. Catatonic or other grossly disorganized behavior; or
3. Incoherence, loosening of associations, illogical thinking, or poverty of content of speech if associated with one of the following:
 - a. Blunt affect; or
 - b. Flat affect; or
 - c. Inappropriate affect;

or

4. Emotional withdrawal and/or isolation;

AND

B. Resulting in at least two of the following:

1. Marked restriction of activities of daily living; or
2. Marked difficulties in maintaining social functioning; or
3. Deficiencies of concentration, persistence or pace resulting in frequent failure to complete tasks in a timely manner (in work settings or elsewhere); or
4. Repeated episodes of deterioration or decompensation in work or work-like settings which cause the individual to withdraw from that situation or to experience exacerbation of signs and symptoms (which may include deterioration of adaptive behaviors);

OR

C. Medically documented history of one or more episodes of acute symptoms, signs and functional limitations which at the time met the requirements in A and B of this listing, although these symptoms or signs are currently attenuated by medication or psychosocial support, and one of the following:

1. Repeated episodes of deterioration or decompensation in situations which cause the individual to withdraw from that situation or to experience exacerbation of signs or symptoms (which may include deterioration of adaptive behaviors); or
2. Documented current history of two or more years of inability to function outside of a highly supportive living situation.

12.04 *Affective Disorders*: Characterized by a disturbance of mood, accompanied by a full or partial manic or depressive syndrome. Mood refers to a prolonged emotion that colors the whole psychic life; it generally involves either depression or elation.

The required level of severity for these disorders is met when the requirements in both A and B are satisfied.

A. Medically documented persistence, either continuous or intermittent, of one of the following:

1. Depressive syndrome characterized by at least four of the following:
 - a. Anhedonia or pervasive loss of interest in almost all activities; or
 - b. Appetite disturbance with change in weight; or
 - c. Sleep disturbance; or
 - d. Psychomotor agitation or retardation;
- or
- e. Decreased energy; or
- f. Feelings of guilt or worthlessness; or
- g. Difficulty concentrating or thinking; or
- h. Thoughts of suicide; or
- i. Hallucinations, delusions or paranoid thinking; or

2. Manic syndrome characterized by at least three of the following:

- a. Hyperactivity; or
- b. Pressure of speech; or
- c. Flight of ideas; or
- d. Inflated self-esteem; or
- e. Decreased need for sleep; or
- f. Easy distractability; or
- g. Involvement in activities that have a high probability of painful consequences which are not recognized; or
- h. Hallucinations, delusions or paranoid thinking;

or

3. Bipolar syndrome with a history of episodic periods manifested by the full symptomatic picture of both manic and depressive syndromes (and currently characterized by either or both syndromes);

AND

B. Resulting in at least two of the following:

1. Marked restriction of activities of daily living; or
2. Marked difficulties in maintaining social functioning; or
3. Deficiencies of concentration, persistence or pace resulting in frequent failure to complete tasks in a timely manner (in work settings or elsewhere); or
4. Repeated episodes of deterioration or decompensation in work or work-like settings which cause the individual to withdraw from that situation or to experience exacerbation of signs and symptoms (which may include deterioration of adaptive behaviors).

12.05 *Mental Retardation and Autism*: Mental retardation refers to a significantly subaverage general intellectual functioning with deficits in adaptive behavior initially manifested during the developmental period (before age 22). (Note: The scores specified below refer to those obtained on the WAIS, and are used only for reference purposes. Scores obtained on other standardized and

individually administered tests are acceptable, but the numerical values obtained must indicate a similar level of intellectual functioning.) Autism is a pervasive developmental disorder characterized by social and significant communication deficits originating in the developmental period.

The required level of severity for this disorder is met when the requirements in A, B, C, or D are satisfied.

A. Mental incapacity evidenced by dependence upon others for personal needs (e.g., toileting, eating, dressing, or bathing) and inability to follow directions, such that the use of standardized measures of intellectual functioning is precluded;

OR

B. A valid verbal, performance, or full scale IQ of 59 or less;

OR

C. A valid verbal, performance, or full scale IQ of 60 to 69 inclusive and a physical or other mental impairment imposing additional and significant work-related limitation of function;

OR

D. A valid verbal, performance, or full scale IQ of 60 to 69 inclusive or in the case of autism gross deficits of social and communicative skills with two of the following;

1. Marked restriction of activities of daily living; or

2. Marked difficulties in maintaining social functioning; or

3. Deficiencies of concentration, persistence or pace resulting in frequent failure to complete tasks in a timely manner (in work settings or elsewhere); or

4. Repeated episodes of deterioration or decompensation in work or work-like settings which cause the individual to withdraw from that situation or to experience exacerbation of signs and symptoms (which may include deterioration of adaptive behaviors).

12.06 Anxiety Related Disorders: In these disorders anxiety is either the predominant disturbance or it is experienced if the individual attempts to master symptoms; for example, confronting the dreaded object or situation in a phobic disorder or resisting the obsessions or compulsions in obsessive compulsive disorders.

The required level of severity for these disorders is met when the requirements in both A and B are satisfied, or when the requirements in both A and C are satisfied.

A. Medically documented findings of at least one of the following:

1. Generalized persistent anxiety accompanied by three out of four of the following signs or symptoms:

- a. Motor tension; or
- b. Autonomic hyperactivity; or
- c. Apprehensive expectation; or
- d. Vigilance and scanning;

or

2. A persistent irrational fear of a specific object, activity, or situation which results in a compelling desire to avoid the dreaded object, activity, or situation; or

3. Recurrent severe panic attacks manifested by a sudden unpredictable onset of intense apprehension, fear, terror and sense of impending doom occurring on the average of at least once a week; or

4. Recurrent obsessions or compulsions which are a source of marked distress; or

5. Recurrent and intrusive recollections of a traumatic experience, which are a source of marked distress;

AND

B. Resulting in at least two of the following:

1. Marked restriction of activities of daily living; or

2. Marked difficulties in maintaining social functioning; or

3. Deficiencies of concentration, persistence or pace resulting in frequent failure to complete tasks in a timely manner (in work settings or elsewhere); or

4. Repeated episodes of deterioration or decompensation in work or work-like settings which cause the individual to withdraw from that situation or to experience exacerbation of signs and symptoms (which may include deterioration of adaptive behaviors);

OR

C. Resulting in complete inability to function independently outside the area of one's home.

12.07 Somatoform Disorders: Physical symptoms for which there are no demonstrable organic findings or known physiological mechanisms.

The required level of severity for these disorders is met when the requirements in both A and B are satisfied.

A. Medically documented by evidence of one of the following:

1. A history of multiple physical symptoms of several years duration, beginning before age 30, that have caused the individual to take medicine frequently, see a physician often and alter life patterns significantly; or

2. Persistent nonorganic disturbance of one of the following:

- a. Vision; or
- b. Speech; or
- c. Hearing; or
- d. Use of a limb; or
- e. Movement and its control (e.g., coordination disturbance, psychogenic seizures, akinesia, dyskinesia; or
- f. Sensation (e.g., diminished or heightened).

3. Unrealistic interpretation of physical signs or sensations associated with the preoccupation or belief that one has a serious disease or injury;

AND

B. Resulting in three of the following:

1. Marked restriction of activities of daily living; or
2. Marked difficulties in maintaining social functioning; or
3. Deficiencies of concentration, persistence or pace resulting in frequent failure to complete tasks in a timely manner (in work settings or elsewhere); or
4. Repeated episodes of deterioration or decompensation in work or work-like settings which cause the individual to withdraw from that situation or to experience exacerbation of signs and symptoms (which may include deterioration of adaptive behavior).

12.08 Personality Disorders: A personality disorder exists when personality traits are inflexible and maladaptive and cause either significant impairment in social or occupational functioning or subjective distress. Characteristic features are typical of the individual's long-term functioning and are not limited to discrete episodes of illness.

The required level of severity for these disorders is met when the requirements in both A and B are satisfied.

A. Deeply ingrained, maladaptive patterns of behavior associated with one of the following:

1. Seclusiveness or autistic thinking; or
2. Pathologically inappropriate suspiciousness or hostility; or
3. Oddities of thought, perception, speech and behavior; or
4. Persistent disturbances of mood or affect; or
5. Pathological dependence, passivity, or aggressivity; or
6. Intense and unstable interpersonal relationships and impulsive and damaging behavior;

AND

B. Resulting in three of the following:

1. Marked restriction of activities of daily living; or
2. Marked difficulties in maintaining social functioning; or
3. Deficiencies of concentration, persistence or pace resulting in frequent failure to complete tasks in a timely manner (in work settings or elsewhere); or
4. Repeated episodes of deterioration or decompensation in work or work-like settings which cause the individual to withdraw from that situation or to experience exacerbation of signs and symptoms (which may include deterioration of adaptive behaviors).

12.09 Substance Addiction Disorders: Behavioral changes or physical changes associated with the regular use of substances that affect the central nervous system.

The required level of severity for these disorders is met when the requirements in any of the following (A through I) are satisfied.

A. Organic mental disorders. Evaluate under 12.02.

B. Depressive syndrome. Evaluate under 12.04.

C. Anxiety disorders. Evaluate under 12.06.

D. Personality disorders. Evaluate under 12.08.

E. Peripheral neuropathies. Evaluate under 11.14.

F. Liver damage. Evaluate under 5.05.

G. Gastritis. Evaluate under 5.04.

H. Pancreatitis. Evaluate under 5.08.

I. Seizures. Evaluate under 11.02 or 11.03.

13.00 NEOPLASTIC DISEASES, MALIGNANT

A. *Introduction:* The determination of the level of impairment resulting from malignant tumors is made from a consideration of the site of the lesion, the histogenesis of the tumor, the extent of involvement, the apparent adequacy and response to therapy (surgery, irradiation, hormones, chemotherapy, etc.), and the magnitude of the post therapeutic residuals.

B. *Documentation:* The diagnosis of malignant tumors should be established on the basis of symptoms, signs, and laboratory findings. The site of the primary, recurrent, and metastatic lesion must be specified in all cases of malignant neoplastic diseases. If an operative procedure has been performed, the evidence should include a copy of the operative note and the report of the gross and microscopic examination of the surgical specimen. If these documents are not obtainable, then the summary of hospitalization or a report from the treating physician must include details of the findings at surgery and the results of the pathologist's gross and microscopic examination of the tissues.

For those cases in which a disabling impairment was not established when therapy was begun but progression of the disease is likely, current medical evidence should include a report of a recent examination directed especially at local or regional recurrence, soft part or skeletal metastases, and significant posttherapeutic residuals.

C. *Evaluation.* Usually, when the malignant tumor consists of a local lesion with metastases to the regional lymph nodes which apparently has been completely excised, imminent recurrence or metastases is not anticipated. A number of exceptions are noted in the specific Listings. For adjudicative purposes, "distant metastases" or "metastases beyond the regional lymph nodes" refers to metastasis beyond the lines of the usual radical en bloc resection.

Local or regional recurrence after radical surgery or pathological evidence of incomplete excision by radical surgery is to be equated with unresectable lesions (except for carcinoma of the breast, 13.09C) and, for the purposes of our program, may be evaluated as "inoperable."

Local or regional recurrence after incomplete excision of a localized and still completely resectable tumor is not to be equated

with recurrence after radical surgery. In the evaluation of lymphomas, the tissue type and site of involvement are not necessarily indicators of the degree of impairment.

When a malignant tumor has metastasized beyond the regional lymph nodes, the impairment will usually be found to meet the requirements of a specific listing. Exceptions are hormone-dependent tumors, isotope-sensitive metastases, and metastases from seminoma of the testicles which are controlled by definitive therapy.

When the original tumor and any metastases have apparently disappeared and have not been evident for 3 or more years, the impairment does not meet the criteria under this body system.

D. *Effects of therapy.* Significant posttherapeutic residuals, not specifically included in the category of impairments for malignant neoplasms, should be evaluated according to the affected body system.

Where the impairment is not listed in the Listing of Impairments and is not medically equivalent to a listed impairment, the impact of any residual impairment including that caused by therapy must be considered. The therapeutic regimen and consequent adverse response to therapy may vary widely; therefore, each case must be considered on an individual basis. It is essential to obtain a specific description of the therapeutic regimen, including the drugs given, dosage, frequency of drug administration, and plans for continued drug administration. It is necessary to obtain a description of the complications or any other adverse response to therapy such as nausea, vomiting, diarrhea, weakness, dermatologic disorders, or reactive mental disorders. Since the severity of the adverse effects of anticancer chemotherapy may change during the period of drug administration, the decision regarding the impact of drug therapy should be based on a sufficient period of therapy to permit proper consideration.

E. *Onset.* To establish onset of disability prior to the time a malignancy is first demonstrated to be inoperable or beyond control by other modes of therapy (and prior evidence is nonexistent) requires medical judgment based on medically reported symptoms, the type of the specific malignancy, its location, and extent of involvement when first demonstrated.

13.01 Category of Impairments, Neoplastic Diseases—Malignant

13.02 *Head and neck* (except salivary glands—13.07, thyroid gland—13.08, and mandible, maxilla, orbit, or temporal fossa—13.11):

- A. Inoperable; or
- B. Not controlled by prescribed therapy; or
- C. Recurrent after radical surgery or irradiation; or
- D. With distant metastases; or

E. Epidermoid carcinoma occurring in the pyriform sinus or posterior third of the tongue.

13.03 *Sarcoma of skin:*

A. Angiosarcoma with metastases to regional lymph nodes or beyond; or

B. Mycosis fungoides with metastases to regional lymph nodes, or with visceral involvement.

13.04 *Sarcoma of soft parts:* Not controlled by prescribed therapy.

13.05 *Malignant melanoma:*

A. Recurrent after wide excision; or

B. With metastases to adjacent skin (satellite lesions) or elsewhere.

13.06 *Lymph nodes:*

A. Hodgkin's disease or non-Hodgkin's lymphoma with progressive disease not controlled by prescribed therapy; or

B. Metastatic carcinoma in a lymph node (except for epidermoid carcinoma in a lymph node in the neck) where the primary site is not determined after adequate search; or

C. Epidermoid carcinoma in a lymph node in the neck not responding to prescribed therapy.

13.07 *Salivary glands*— carcinoma or sarcoma with metastases beyond the regional lymph nodes.

13.08 *Thyroid gland*—carcinoma with metastases beyond the regional lymph nodes, not controlled by prescribed therapy.

13.09 *Breast:*

A. Inoperable carcinoma; or

B. Inflammatory carcinoma; or

C. Recurrent carcinoma, except local recurrence controlled by prescribed therapy; or

D. Distant metastases from breast carcinoma (bilateral breast carcinoma, synchronous or metachronous is usually primary in each breast); or

E. Sarcoma with metastases anywhere.

13.10 *Skeletal system* (exclusive of the jaw):

A. Malignant primary tumors with evidence of metastases and not controlled by prescribed therapy; or

B. Metastatic carcinoma to bone where the primary site is not determined after adequate search.

13.11 *Mandible, maxilla, orbit, or temporal fossa:*

A. Sarcoma of any type with metastases; or

B. Carcinoma of the antrum with extension into the orbit or ethmoid or sphenoid sinus, or with regional or distant metastases; or

C. Orbital tumors with intracranial extension; or

D. Tumors of the temporal fossa with perforation of skull and meningeal involvement; or

E. Adamantinoma with orbital or intracranial infiltration; or

F. Tumors of Rathke's pouch with infiltration of the base of the skull or metastases.

13.12 *Brain or spinal cord:*

A. Metastatic carcinoma to brain or spinal cord.

B. Evaluate other tumors under the criteria described in 11.05 and 11.08.

13.13 *Lungs.*

A. Unresectable or with incomplete excision; or

B. Recurrence or metastases after resection; or

C. Oat cell (small cell) carcinoma; or

D. Squamous cell carcinoma, with metastases beyond the hilar lymph nodes; or

E. Other histologic types of carcinoma, including undifferentiated and mixed-cell types (but excluding oat cell carcinoma, 13.13C, and squamous cell carcinoma, 13.13D), with metastases to the hilar lymph nodes.

13.14 *Pleura or mediastinum:*

A. Malignant mesothelioma of pleura; or

B. Malignant tumors, metastatic to pleura; or

C. Malignant primary tumor of the mediastinum not controlled by prescribed therapy.

13.15 *Abdomen:*

A. Generalized carcinomatosis; or

B. Retroperitoneal cellular sarcoma not controlled by prescribed therapy; or

C. Ascites with demonstrated malignant cells.

13.16 *Esophagus or stomach:*

A. Carcinoma or sarcoma of the esophagus; or

B. Carcinoma of the stomach with metastases to the regional lymph nodes or extension to surrounding structure; or

C. Sarcoma of stomach not controlled by prescribed therapy; or

D. Inoperable carcinoma; or

E. Recurrence or metastases after resection.

13.17 *Small intestine:*

A. Carcinoma, sarcoma, or carcinoid tumor with metastases beyond the regional lymph nodes; or

B. Recurrence of carcinoma, sarcoma, or carcinoid tumor after resection; or

C. Sarcoma, not controlled by prescribed therapy.

13.18 *Large intestine* (from ileocecal valve to and including anal canal)—carcinoma or sarcoma.

A. Unresectable; or

B. Metastases beyond the regional lymph nodes; or

C. Recurrence or metastases after resection.

13.19 *Liver or gallbladder:*

A. Primary or metastatic malignant tumors of the liver; or

B. Carcinoma of the gallbladder; or

C. Carcinoma of the bile ducts.

13.20 *Pancreas:*

A. Carcinoma except islet cell carcinoma; or

B. Islet cell carcinoma which is unresectable and physiologically active.

13.21 *Kidneys, adrenal glands, or ureters—carcinoma:*

A. Unresectable; or

B. With hematogenous spread to distant sites; or

C. With metastases to regional lymph nodes.

13.22 *Urinary bladder—carcinoma.* With:

A. Infiltration beyond the bladder wall; or

B. Metastases to regional lymph nodes; or

C. Unresectable; or

D. Recurrence after total cystectomy; or

E. Evaluate renal impairment after total cystectomy under the criteria in 6.02.

13.23 *Prostate gland—carcinoma* not controlled by prescribed therapy.

13.24 *Testicles:*

A. Choriocarcinoma; or

B. Other malignant primary tumors with progressive disease not controlled by prescribed therapy.

13.25 *Uterus—carcinoma or sarcoma* (corpus or cervix).

A. Inoperable and not controlled by prescribed therapy; or

B. Recurrent after total hysterectomy; or

C. Total pelvic exenteration

13.26 *Ovaries—*all malignant, primary or recurrent tumors. With:

A. Ascites with demonstrated malignant cells; or

B. Unresectable infiltration; or

C. Unresectable metastases to omentum or elsewhere in the peritoneal cavity; or

D. Distant metastases.

13.27 *Leukemia:* Evaluate under the criteria of 7.00ff, Hemic and Lymphatic System.

13.28 *Uterine (Fallopian) tubes—carcinoma or sarcoma:*

A. Unresectable, or

B. Metastases to regional lymph nodes.

13.29 *Penis—carcinoma with metastases to regional lymph nodes.*

13.30 *Vulva—carcinoma, with distant metastases.*

Part B

Medical criteria for the evaluation of impairments of children under age 18 (where criteria in Part A do not give appropriate consideration to the particular disease process in childhood).

Sec.

100.00 Growth Impairment.

101.00 Musculoskeletal System.

102.00 Special Senses and Speech.

103.00 Respiratory System.

104.00 Cardiovascular System.

105.00 Digestive System.

106.00 Genito-Urinary System.

107.00 Hemic and Lymphatic System.

108.00 [Reserved]

109.00 Endocrine System.

110.00 Multiple Body Systems.

111.00 Neurological.

112.00 Mental and Emotional Disorders.

113.00 Neoplastic Diseases, Malignant.

100.00 GROWTH IMPAIRMENT

A. *Impairment of growth* may be disabling in itself or it may be an indicator of the severity of the impairment due to a specific disease process.

Determinations of growth impairment should be based upon the comparison of current height with at least three previous determinations, including length at birth, if available. Heights (or lengths) should be plotted on a standard growth chart, such as derived from the National Center for Health Statistics: NCHS Growth Charts. Height should be measured without shoes. Body weight corresponding to the ages represented by the heights should be furnished. The adult heights of the child's natural parents and the heights and ages of siblings should also be furnished. This will provide a basis upon which to identify those children whose short stature represents a familial characteristic rather than a result of disease. This is particularly true for adjudication under 100.02B.

B. *Bone age determinations* should include a full descriptive report of roentgenograms specifically obtained to determine bone age and must cite the standardization method used. Where roentgenograms must be obtained currently as a basis for adjudication under 100.03, views of the left hand and wrist should be ordered. In addition, roentgenograms of the knee and ankle should be obtained when cessation of growth is being evaluated in an older child at, or past, puberty.

C. The criteria in this section are applicable until closure of the major epiphyses. The cessation of significant increase in height at that point would prevent the application of these criteria.

100.01 Category of Impairments, Growth

100.02 *Growth impairment*, considered to be related to an additional specific medically determinable impairment, and one of the following:

A. Fall of greater than 15 percentiles in height which is sustained; or

B. Fall to, or persistence of, height below the third percentile.

100.03 *Growth impairment*, not identified as being related to an additional, specific medically determinable impairment. With:

A. Fall of greater than 25 percentiles in height which is sustained; and

B. Bone age greater than two standard deviations (2 SD) below the mean for chronological age (see 100.00B).

101.00 MUSCULOSKELETAL SYSTEM

A. *Rheumatoid arthritis*. Documentation of the diagnosis of juvenile rheumatoid arthritis should be made according to an established protocol, such as that published by the Arthritis Foundation, *Bulletin on the Rheumatic Diseases*. Vol. 23, 1972-1973 Series, p 712. Inflammatory signs include persistent

pain, tenderness, erythema, swelling, and increased local temperature of a joint.

B. *The measurements of joint motion* are based on the technique for measurements described in the "Joint Method of Measuring and Recording," published by the American Academy of Orthopedic Surgeons in 1965, or "The Extremities and Back" in *Guides to the Evaluation of Permanent Impairment*, Chicago, American Medical Association, 1971, Chapter 1, pp. 1-48.

C. *Degenerative arthritis* may be the end stage of many skeletal diseases and conditions, such as traumatic arthritis, collagen disorders septic arthritis, congenital dislocation of the hip, aseptic necrosis of the hip, slipped capital femoral epiphyses, skeletal dysplasias, etc.

101.01 Category of Impairments, Musculoskeletal

101.02 *Juvenile rheumatoid arthritis*. With:

A. Persistence or recurrence of joint inflammation despite three months of medical treatment and one of the following:

1. Limitation of motion of two major joints of 50 percent or greater; or

2. Fixed deformity of two major weight-bearing joints of 30 degrees or more; or

3. Radiographic changes of joint narrowing, erosion, or subluxation; or

4. Persistent or recurrent systemic involvement such as iridocyclitis or pericarditis; or

B. Steroid dependence.

101.03 *Deficit of musculoskeletal function* due to deformity or musculoskeletal disease and one of the following:

A. Walking is markedly reduced in speed or distance despite orthotic or prosthetic devices; or

B. Ambulation is possible only with obligatory bilateral upper limb assistance (e.g., with walker, crutches); or

C. Inability to perform age-related personal self-care activities involving feeding, dressing, and personal hygiene.

101.05 *Disorders of the spine*.

A. Fracture of vertebra with cord involvement (substantiated by appropriate sensory and motor loss); or

B. Scoliosis (congenital idiopathic or neuromyopathic). With:

1. Major spinal curve measuring 60 degrees or greater; or

2. Spinal fusion of six or more levels. Consider under a disability for one year from the time of surgery; thereafter evaluate the residual impairment; or

3. FEV (vital capacity) of 50 percent or less of predicted normal values for the individual's measured (actual) height; or

C. Kyphosis or lordosis measuring 90 degrees or greater.

101.08 *Chronic osteomyelitis* with persistence or recurrence of inflammatory signs or

drainage for at least 6 months despite prescribed therapy and consistent radiographic findings.

102.00 SPECIAL SENSES AND SPEECH

A. *Visual impairments in children.* Impairment of central visual acuity should be determined with use of the standard Snellen test chart. Where this cannot be used, as in very young children, a complete description should be provided of the findings using other appropriate methods of examination, including a description of the techniques used for determining the central visual acuity for distance.

The accommodative reflex is generally not present in children under 6 months of age. In premature infants, it may not be present until 6 months plus the number of months the child is premature. Therefore absence of accommodative reflex will be considered as indicating a visual impairment only in children above this age (6 months).

Documentation of a visual disorder must include description of the ocular pathology.

B. *Hearing impairments in children.* The criteria for hearing impairments in children take into account that a lesser impairment in hearing which occurs at an early age may result in a severe speech and language disorder.

Improvement by a hearing aid, as predicted by the testing procedure, must be demonstrated to be feasible in that child, since younger children may be unable to use a hearing aid effectively.

The type of audiometric testing performed must be described and a copy of the results must be included. The pure tone air conduction hearing levels in 102.08 are based on American National Standard Institute Specifications for Audiometers, S3.6-1969 (ANSI-1969). The report should indicate the specifications used to calibrate the audiometer.

The finding of a severe impairment will be based on the average hearing levels at 500, 1000, 2000, and 3000 Hertz (Hz) in the better ear, and on speech discrimination, as specified in §102.08.

102.01 Category of Impairments, Special Sense Organs

102.02 *Impairments of central visual acuity.*

A. Remaining vision in the better eye after best correction is 20/200 or less; or

B. For children below 3 years of age at time of adjudication:

1. Absence of accommodative reflex (see 102.00A for exclusion of children under 6 months of age); or

2. Retrolental fibroplasia with macular scarring or neovascularization; or

3. Bilateral congenital cataracts with visualization of retinal red reflex only or when associated with other ocular pathology.

102.08 *Hearing impairments.*

A. For children below 5 years of age at time of adjudication, inability to hear air

conduction thresholds at an average of 40 decibels (db) hearing level or greater in the better ear; or

B. For children 5 years of age and above at time of adjudication:

1. Inability to hear air conduction thresholds at an average of 70 decibels (db) or greater in the better ear; or

2. Speech discrimination scores at 40 percent or less in the better ear; or

3. Inability to hear air conduction thresholds at an average of 40 decibels (db) or greater in the better ear, and a speech and language disorder which significantly affects the clarity and content of the speech and is attributable to the hearing impairment.

103.00 RESPIRATORY SYSTEM

A. *Documentation of pulmonary insufficiency.* The reports of spirometric studies for evaluation under Table I must be expressed in liters (BTPS). The reported FEV₁ should represent the largest of at least three satisfactory attempts. The appropriately labeled spirometric tracing of three FEV₁ maneuvers must be submitted with the report, showing distance per second on the abscissa and distance per liter on the ordinate. The unit distance for volume on the tracing should be at least 15 mm. per liter and the paper speed at least 20 mm. per second. The height of the individual without shoes must be recorded.

The ventilatory function studies should not be performed during or soon after an acute episode or exacerbation of a respiratory illness. In the presence of acute bronchospasm, or where the FEV₁ is less than that stated in Table I, the studies should be repeated after the administration of a nebulized bronchodilator. If a bronchodilator was not used in such instances, the reason should be stated in the report.

A statement should be made as to the child's ability to understand directions and to cooperate in performance of the test, and should include an evaluation of the child's effort. When tests cannot be performed or completed, the reason (such as a child's young age) should be stated in the report.

B. *Cystic fibrosis.* This section discusses only the pulmonary manifestations of cystic fibrosis. Other manifestations, complications, or associated disease must be evaluated under the appropriate section.

The diagnosis of cystic fibrosis will be based upon appropriate history, physical examination, and pertinent laboratory findings. Confirmation based upon elevated concentration of sodium or chloride in the sweat should be included, with indication of the technique used for collection and analysis.

103.01 Category of Impairments, Respiratory

103.03 *Bronchial asthma.* With evidence of progression of the disease despite therapy and documented by one of the following:

A. Recent, recurrent intense asthmatic attacks requiring parenteral medication; or

B. Persistent prolonged expiration with wheezing between acute attacks and radiographic findings of peribronchial disease.

103.13 *Pulmonary manifestations of cystic fibrosis.* With:

A. FEV₁ equal to or less than the values specified in Table I (see §103.00A for requirements of ventilatory function testing); or

B. For children where ventilatory function testing cannot be performed:

1. History of dyspnea on mild exertion or chronic frequent productive cough; and

2. Persistent or recurrent abnormal breath sounds, bilateral rales or rhonchi; and

3. Radiographic findings of extensive disease with hyperaeration and bilateral peribronchial infiltration.

TABLE I

Height (in centimeters)	FEV ₁ equal to or less than (L, BTPS)
110 or less	0.6
120	0.7
130	0.9
140	1.1
150	1.3
160	1.5
170 or more	1.6

104.00 CARDIOVASCULAR SYSTEM

A. *General.* Evaluation should be based upon history, physical findings, and appropriate laboratory data. Reported abnormalities should be consistent with the pathologic diagnosis. The actual electrocardiographic tracing, or an adequate marked photocopy, must be included. Reports of other pertinent studies necessary to substantiate the diagnosis or describe the severity of the impairment must also be included:

B. *Evaluation of cardiovascular impairment in children* requires two steps:

1. The delineation of a specific cardiovascular disturbance, either congenital or acquired. This may include arterial or venous disease, rhythm disturbance, or disease involving the valves, septa, myocardium or pericardium; and

2. Documentation of the severity of the impairment, with medically determinable and consistent cardiovascular signs, symptoms, and laboratory data. In cases where impairment characteristics are questionably secondary to the cardiovascular disturbance, additional documentation of the severity of the impairment (e.g., catheterization data, if performed) will be necessary.

C. *Chest roentgenogram* (6 ft. PA film) will be considered indicative of cardiomegaly if:

1. The cardiothoracic ratio is over 60 percent at age one year or less, or 55 percent at more than one year of age; or

2. The cardiac size is increased over 15 percent from any prior chest roentgenograms; or

3. Specific chamber or vessel enlargement is documented in accordance with established criteria.

D. *Tables I, II, and III* below are designed for case adjudication and not for diagnostic purposes. The adult criteria may be useful for older children and should be used when applicable.

E. *Rheumatic fever*, as used in this section assumes diagnosis made according to the revised Jones Criteria.

104.01 Category of Impairments, Cardiovascular

104.02 *Chronic congestive failure.* With two or more of the following signs:

A. Tachycardia (see Table I).

B. Tachypnea (see Table II).

C. Cardiomegaly on chest roentgenogram (see 104.00C).

D. Hepatomegaly (more than 2 cm. below the right costal margin in the right midclavicular line).

E. Evidence of pulmonary edema, such as rales or orthopnea.

F. Dependent edema.

G. Exercise intolerance manifested as labored respiration on mild exertion (e.g., in an infant, feeding).

TABLE I—TACHYCARDIA AT REST

Age	Apical Heart (beats per minute)
Under 1 yr	150
1 through 3 yrs	130
4 through 9 yrs	120
10 through 15 yrs	110
Over 15 yr	100

TABLE II—TACHYPNEA AT REST

Age	Respiratory rate over (per minute)
Under 1 yr	40
1 through 5 yrs	35
6 through 9 yrs	30
Over 9 yrs	25

104.03 *Hypertensive cardiovascular disease.* With persistently elevated blood pressure for age (see Table III) and one of the following:

A. Impaired renal function as described under the criteria in 106.02; or

B. Cerebrovascular damage as described under the criteria in 111.06; or

C. Congestive heart failure as described under the criteria in 104.02.

TABLE III—ELEVATED BLOOD PRESSURE

Age	S (over) mm.	Diastolic (over) in mm.
Under 6 mo	95	60
6 mo. to 1 yr	110	70
1 through 8 yrs	115	80
9 through 11 yrs	120	80
12 through 15 yrs	130	80
Over 15 yrs	140	80

104.04 *Cyanotic congenital heart disease.*

With one of the following:

A. Surgery is limited to palliative measures; or

B. Characteristic squatting, hemoptysis, syncope, or hypercyanotic spells; or

C. Chronic hematocrit of 55 percent or greater or arterial O₂ saturation of less than 90 percent at rest, or arterial oxygen tension of less than 60 Torr at rest.

104.05 *Cardiac arrhythmia, such as persistent or recurrent heart block or A-V dissociation (with or without therapy).* And one of the following:

A. Cardiac syncope; or

B. Congestive heart failure as described under the criteria in 104.02; or

C. Exercise intolerance with labored respirations on mild exertion (e.g., in infants, feeding).

104.07 *Cardiac syncope* with at least one documented syncopal episode characteristic of specific cardiac disease (e.g., aortic stenosis).

104.08 *Recurrent hemoptysis.* Associated with either pulmonary hypertension or extensive bronchial collaterals due to documented chronic cardiovascular disease.

104.09 *Chronic rheumatic fever or rheumatic heart disease.* With:

A. Persistence of rheumatic fever activity for 6 months or more, with significant murmur(s), cardiomegaly (see 104.00C), and other abnormal laboratory findings (such as elevated sedimentation rate or electrocardiographic findings); or

B. Congestive heart failure as described under the criteria in 104.02.

105.00 DIGESTIVE SYSTEM

A. *Disorders of the digestive system* which result in disability usually do so because of interference with nutrition and growth, multiple recurrent inflammatory lesions, or other complications of the disease. Such lesions or complications usually respond to treatment. To constitute a listed impairment, these must be shown to have persisted or be expected to persist despite prescribed therapy for a continuous period of at least 12 months.

B. *Documentation of gastrointestinal impairments* should include pertinent operative findings, radiographic studies, endoscopy, and biopsy reports. Where a liver biopsy has

been performed in chronic liver disease, documentation should include the report of the biopsy.

C. *Growth retardation and malnutrition.* When the primary disorder of the digestive tract has been documented, evaluate resultant malnutrition under the criteria described in 105.08. Evaluate resultant growth impairment under the criteria described in 100.03. Intestinal disorders, including surgical diversions and potentially correctable congenital lesions, do not represent a severe impairment if the individual is able to maintain adequate nutrition growth and development.

D. *Multiple congenital anomalies.* See related criteria, and consider as a combination of impairments.

105.01 Category of Impairments, Digestive

105.03 *Esophageal obstruction, caused by atresia, stricture, or stenosis* with malnutrition as described under the criteria in 105.08.

105.05 *Chronic liver disease.* With one of the following:

A. Inoperable biliary atresia demonstrated by X-ray or surgery; or

B. Intractable ascites not attributable to other causes, with serum albumin of 3.0 gm./100 ml. or less; or

C. Esophageal varices (demonstrated by angiography, barium swallow, or endoscopy or by prior performance of a specific shunt or plication procedure); or

D. Hepatic coma, documented by findings from hospital records; or

E. Hepatic encephalopathy. Evaluate under the criteria in 112.02; or

F. Chronic active inflammation or necrosis documented by SGOT persistently more than 100 units or serum bilirubin of 2.5 mg. percent or greater.

105.07 *Chronic inflammatory bowel disease (such as ulcerative colitis, regional enteritis), as documented in 105.00.* With one of the following:

A. Intestinal manifestations or complications, such as obstruction, abscess, or fistula formation which has lasted or is expected to last 12 months; or

B. Malnutrition as described under the criteria in 105.08; or

C. Growth impairment as described under the criteria in 100.03.

105.08 *Malnutrition, due to demonstrable gastrointestinal disease causing either a fall of 15 percentiles of weight which persists or the persistence of weight which is less than the third percentile (on standard growth charts).* And one of the following:

A. Stool fat excretion per 24 hours:

1. More than 15 percent in infants less than 6 months.

2. More than 10 percent in infants 6-18 months.

3. More than 6 percent in children more than 18 months; or

B. Persistent hematocrit of 30 percent or less despite prescribed therapy; or

C. Serum carotene of 40 mcg./100 ml. or less; or

D. Serum albumin of 3.0 gm./100 ml. or less.

106.00 GENITO-URINARY SYSTEM

A. *Determination of the presence of chronic renal disease* will be based upon the following factors:

1. History, physical examination, and laboratory evidence of renal disease.

2. Indications of its progressive nature or laboratory evidence of deterioration of renal function.

B. *Renal transplant.* The amount of function restored and the time required to effect improvement depend upon various factors including adequacy of post transplant renal function, incidence of renal infection, occurrence of rejection crisis, presence of systemic complications (anemia, neuropathy, etc.) and side effects of corticosteroid or immuno-suppressive agents. A period of at least 12 months is required for the individual to reach a point of stable medical improvement.

C. Evaluate associated disorders and complications according to the appropriate body system listing.

106.01 Category of Impairments, Genito-Urinary

106.02 *Chronic renal disease.* With:

A. Persistent elevation of serum creatinine to 3 mg. per deciliter (100 ml.) or greater over at least 3 months; or

B. Reduction of creatinine clearance to 30 ml. per minute (43 liters/24 hours) per 1.73 m² of body surface area over at least 3 months; or

C. Chronic renal dialysis program for irreversible renal failure; or

D. Renal transplant. Consider under a disability for 12 months following surgery; thereafter, evaluate the residual impairment (see 106.00B).

106.06 Nephrotic syndrome, with edema not controlled by prescribed therapy. And:

A. Serum albumin less than 2 gm./100 ml.; or

B. Proteinuria more than 2.5 gm./1.73m²/day.

107.00 HEMIC AND LYMPHATIC SYSTEM

A. *Sickle cell disease* refers to a chronic hemolytic anemia associated with sickle cell hemoglobin, either homozygous or in combination with thalassemia or with another abnormal hemoglobin (such as C or F).

Appropriate hematologic evidence for sickle cell disease, such as hemoglobin electrophoresis must be included. Vaso-occlusive, hemolytic, or aplastic episodes should be documented by description of severity, frequency, and duration.

Disability due to sickle cell disease may be solely the result of a severe, persistent anemia or may be due to the combination of chronic progressive or episodic manifestations in the presence of a less severe anemia.

Major visceral episodes causing disability include meningitis, osteomyelitis, pulmonary infections or infarctions, cerebrovascular accidents, congestive heart failure, genitourinary involvement, etc.

B. *Coagulation defects.* Chronic inherited coagulation disorders must be documented by appropriate laboratory evidence such as abnormal thromboplastin generation, coagulation time, or factor assay.

C. *Acute leukemia.* Initial diagnosis of acute leukemia must be based upon definitive bone marrow pathologic evidence. Recurrent disease may be documented by peripheral blood, bone marrow, or cerebrospinal fluid examination. The pathology report must be included.

The designated duration of disability implicit in the finding of a listed impairment is contained in 107.11. Following the designated time period, a documented diagnosis itself is no longer sufficient to establish a severe impairment. The severity of any remaining impairment must be evaluated on the basis of the medical evidence.

107.01 Category of Impairments, Hemic and Lymphatic

107.03 *Hemolytic anemia (due to any cause).* Manifested by persistence of hematocrit of 26 percent or less despite prescribed therapy, and reticulocyte count of 4 percent or greater.

107.05 *Sickle cell disease.* With:

A. Recent, recurrent, severe vaso-occlusive crises (musculoskeletal, vertebral, abdominal); or

B. A major visceral complication in the 12 months prior to application; or

C. A hyperhemolytic or aplastic crisis within 12 months prior to application; or

D. Chronic, severe anemia with persistence of hematocrit of 26 percent or less; or

E. Congestive heart failure, cerebrovascular damage, or emotional disorder as described under the criteria in 104.02, 111.00ff, or 112.00ff.

107.06 *Chronic idiopathic thrombocytopenic purpura of childhood* with purpura and thrombocytopenia of 40,000 platelets/cu. mm. or less despite prescribed therapy or recurrent upon withdrawal of treatment.

107.08 *Inherited coagulation disorder.* With:

A. Repeated spontaneous or inappropriate bleeding; or

B. Hemarthrosis with joint deformity.

107.11 *Acute leukemia.* Consider under a disability:

A. For 2½ years from the time of initial diagnosis; or

B. For 2½ years from the time of recurrence of active disease.

108.00 [RESERVED]

109.00 ENDOCRINE SYSTEM

A. *Cause of disability.* Disability is caused by a disturbance in the regulation of the secretion or metabolism of one or more hormones which are not adequately controlled by therapy. Such disturbances or abnormalities usually respond to treatment. To constitute a listed impairment these must be shown to have persisted or be expected to persist despite prescribed therapy for a continuous period of at least 12 months.

B. *Growth.* Normal growth is usually a sensitive indicator of health as well as of adequate therapy in children. Impairment of growth may be disabling in itself or may be an indicator of a severe disorder involving the endocrine system or other body systems. Where involvement of other organ systems has occurred as a result of a primary endocrine disorder, these impairments should be evaluated according to the criteria under the appropriate sections.

C. *Documentation.* Description of characteristic history, physical findings, and diagnostic laboratory data must be included. Results of laboratory tests will be considered abnormal if outside the normal range or greater than two standard deviations from the mean of the testing laboratory. Reports in the file should contain the information provided by the testing laboratory as to their normal values for that test.

D. *Hyperfunction of the adrenal cortex.* Evidence of growth retardation must be documented as described in 100.00. Elevated blood or urinary free cortisol levels are not acceptable in lieu of urinary 17-hydroxycorticosteroid excretion for the diagnosis of adrenal cortical hyperfunction.

E. *Adrenal cortical insufficiency.* Documentation must include persistent low plasma cortisol or low urinary 17-hydroxycorticosteroids or 17-ketogenic steroids and evidence of unresponsiveness to ACTH stimulation.

109.01 Category of Impairments, Endocrine

109.02 Thyroid Disorders.

A. Hyperthyroidism (as documented in 109.00C). With clinical manifestations despite prescribed therapy, and one of the following:

1. Elevated serum thyroxine (T₄) and either elevated free T₄ or resin T₃ uptake; or
2. Elevated thyroid uptake of radioiodine; or

3. Elevated serum triiodothyronine (T₃).

B. *Hypothyroidism.* With one of the following, despite prescribed therapy:

1. IQ of 69 or less; or
2. Growth impairment as described under the criteria in 100.02 A and B; or
3. Precocious puberty.

109.03 *Hyperparathyroidism (as documented in 109.00C).* With:

- A. Repeated elevated total or ionized serum calcium; or

- B. Elevated serum parathyroid hormone.

109.04 *Hypoparathyroidism or Pseudohypoparathyroidism.* With:

- A. Severe recurrent tetany or convulsions which are unresponsive to prescribed therapy; or

- B. Growth retardation as described under criteria in 100.02 A and B.

109.05 *Diabetes insipidus, documented by pathologic hypertonic saline or water deprivation test.* And one of the following:

- A. Intracranial space-occupying lesion, before or after surgery; or

- B. Unresponsiveness to Pitressin; or

- C. Growth retardation as described under the criteria in 100.02 A and B; or

- D. Unresponsive hypothalamic thirst center, with chronic or recurrent hypernatremia; or

- E. Decreased visual fields attributable to a pituitary lesion.

109.06 *Hyperfunction of the adrenal cortex (Primary or secondary).* With:

- A. Elevated urinary 17-hydroxycorticosteroids (or 17-ketogenic steroids) as documented in 109.00 C and D; and

- B. Unresponsiveness to low-dose dexamethasone suppression.

109.07 *Adrenal cortical insufficiency (as documented in 109.00 C and E)* with recent, recurrent episodes of circulatory collapse.

109.08 *Juvenile diabetes mellitus (as documented in 109.00C)* requiring parenteral insulin. And one of the following, despite prescribed therapy:

- A. Recent, recurrent hospitalizations with acidosis; or

- B. Recent, recurrent episodes of hypoglycemia; or

- C. Growth retardation as described under the criteria in 100.02 A or B; or

- D. Impaired renal function as described under the criteria in 106.00ff.

109.09 *Iatrogenic hypercorticoid state.*

With chronic glucocorticoid therapy resulting in one of the following:

- A. Osteoporosis; or

- B. Growth retardation as described under the criteria in 100.02 A or B; or

- C. Diabetes mellitus as described under the criteria in 109.08; or

- D. Myopathy as described under the criteria in 111.06; or

- E. Emotional disorder as described under the criteria in 112.00ff.

109.10 *Pituitary dwarfism (with documented growth hormone deficiency).* And growth impairment as described under the criteria in 100.02B.

109.11 *Adrenogenital syndrome.* With:

- A. Recent, recurrent self-losing episodes despite prescribed therapy; or

- B. Inadequate replacement therapy manifested by accelerated bone age and virilization, or

- C. Growth impairment as described under the criteria in 100.02 A or B.

109.12 *Hypoglycemia (as documented in 109.00C)*. With recent, recurrent hypoglycemic episodes producing convulsion or coma.

109.13 *Gonadal Dysgenesis (Turner's Syndrome), chromosomally proven*. Evaluate the resulting impairment under the criteria for the appropriate body system.

110.00 MULTIPLE BODY SYSTEMS

A. *Catastrophic congenital abnormalities or disease*. This section refers only to very serious congenital disorders, diagnosed in the newborn or infant child.

B. *Immune deficiency diseases*. Documentation of immune deficiency disease must be submitted, and may include quantitative immunoglobulins, skin tests for delayed hypersensitivity, lymphocyte stimulative tests, and measurements of cellular immunity mediators.

110.01 Category of Impairments, Multiple Body Systems

110.08 *Catastrophic congenital abnormalities or disease*. With:

A. A positive diagnosis (such as anencephaly, trisomy D or E, cycloopia, etc.), generally regarded as being incompatible with extrauterine life; or

B. A positive diagnosis (such as cri du chat, Tay-Sachs Disease) wherein attainment of the growth and development level of 2 years is not expected to occur.

110.09 *Immune deficiency disease*.

A. *Hypogammaglobulinemia or dysgammaglobulinemia*. With:

1. Recent, recurrent severe infections; or

2. A complication such as growth retardation, chronic lung disease, collagen disorder, or tumors.

E. *Thymic dysplastic syndromes* (such as Swiss, diGeorge).

111.00 NEUROLOGICAL

A. *Seizure disorder* must be substantiated by at least one detailed description of a typical seizure. Report of recent documentation should include an electroencephalogram and neurological examination. Sleep EEG is preferable, especially with temporal lobe seizures. Frequency of attacks and any associated phenomena should also be substantiated.

Young children may have convulsions in association with febrile illnesses. Proper use of 111.02 and 111.03 requires that a seizure disorder be established. Although this does not exclude consideration of seizures occurring during febrile illnesses, it does require documentation of seizures during nonfebrile periods.

There is an expected delay in control of seizures when treatment is started, particularly when changes in the treatment regimen are necessary. Therefore, a seizure disorder should not be considered to meet the require-

ments of 111.02 or 111.03 unless it is shown that seizures have persisted more than three months after prescribed therapy began.

B. *Minor motor seizures*. Classical petit mal seizures must be documented by characteristic EEG pattern, plus information as to age at onset and frequency of clinical seizures. Myoclonic seizures, whether of the typical infantile or Lennox-gastaut variety after infancy, must also be documented by the characteristic EEG pattern plus information as to age at onset and frequency of seizures.

C. *Motor dysfunction*. As described in 111.06, motor dysfunction may be due to any neurological disorder. It may be due to static or progressive conditions involving any area of the nervous system and producing any type of neurological impairment. This may include weakness, spasticity, lack of coordination, ataxia, tremor, athetosis, or sensory loss. Documentation of motor dysfunction must include neurologic findings and description of type of neurologic abnormality (e.g., spasticity, weakness), as well as a description of the child's functional impairment (i.e., what the child is unable to do because of the abnormality). Where a diagnosis has been made, evidence should be included for substantiation of the diagnosis (e.g., blood chemistries and muscle biopsy reports), wherever applicable.

D. *Impairment of communication*. The documentation should include a description of a recent comprehensive evaluation, including all areas of affective and effective communication, performed by a qualified professional.

111.01 Category of Impairment, Neurological

111.02 *Major motor seizure disorder*.

A. *Major motor seizures*. In a child with an established seizure disorder, the occurrence of more than one major motor seizure per month despite at least three months of prescribed treatment. With:

1. Daytime episodes (loss of consciousness and convulsive seizures); or

2. Nocturnal episodes manifesting residuals which interfere with activity during the day.

B. *Major motor seizures*. In a child with an established seizure disorder, the occurrence of a least one major motor seizure in the year prior to application despite at least three months of prescribed treatment. And one of the following:

1. IQ of 69 or less; or

2. Significant interference with communication due to speech, hearing, or visual defect; or

3. Significant emotional disorder; or

4. Where significant adverse effects of medication interfere with major daily activities.

111.03 *Minor motor seizure disorder*. In a child with an established seizure disorder, the occurrence of more than one minor

motor seizure per week, with alteration of awareness or loss of consciousness, despite at least three months of prescribed treatment.

111.05 *Brain tumors*. A. *Malignant gliomas* (astrocytoma—Grades III and IV, glioblastoma multiforme), medulloblastoma, ependymoblastoma, primary sarcoma or brain stem gliomas; or

B. Evaluate other brain tumors under the criteria for the resulting neurological impairment.

111.06 *Motor dysfunction (due to any neurological disorder)*. Persistent disorganization or deficit of motor function for age involving two extremities, which (despite prescribed therapy) interferes with age-appropriate major daily activities and results in disruption of:

- A. Fine and gross movements; or
- B. Gait and station.

111.07 *Cerebral palsy*. With:

A. Motor dysfunction meeting the requirements of 111.06 or 101.03; or

B. Less severe motor dysfunction (but more than slight) and one of the following:

- 1. IQ of 69 or less; or
- 2. Seizure disorder, with at least one major motor seizure in the year prior to application; or
- 3. Significant interference with communication due to speech, hearing or visual defect; or
- 4. Significant emotional disorder.

111.08 *Meningomyelocele (and related disorders)*. With one of the following despite prescribed treatment:

A. Motor dysfunction meeting the requirements of §101.03 or §111.06; or

B. Less severe motor dysfunction (but more than slight), and:

- 1. Urinary or fecal incontinence when inappropriate for age; or
- 2. IQ of 69 or less; or
- C. Four extremity involvement; or
- D. Noncompensated hydrocephalus producing interference with mental or motor developmental progression.

111.09 *Communication impairment, associated with documented neurological disorder*. And one of the following:

A. Documented speech deficit which significantly affects the clarity and content of the speech; or

B. Documented comprehension deficit resulting in ineffective verbal communication for age; or

C. Impairment of hearing as described under the criteria in 102.08.

112.00 MENTAL AND EMOTIONAL DISORDERS

A. *Introduction*. This section is intended primarily to describe mental and emotional disorders of young children. The criteria describing medically determinable impairments in adults should be used where they clearly appear to be more appropriate.

B. *Mental retardation. General*. As with any other impairment, the necessary evidence consists of symptoms, signs, and laboratory findings which provide medically demonstrable evidence of impairment severity. Standardized intelligence test results are essential to the adjudication of all cases of mental retardation that are not clearly covered under the provisions of 112.05A. Developmental milestone criteria may be the sole basis for adjudication only in cases where the child's young age and/or condition preclude formal standardized testing by a psychologist or psychiatrist experienced in testing children.

Measures of intellectual functioning. Standardized intelligence tests, such as the Wechsler Preschool and Primary Scale of Intelligence (WPPSI), the Wechsler Intelligence Scale for Children—Revised (WISC-R), the Revised Stanford-Binet Scale, and the McCarthy Scales of Children's Abilities, should be used wherever possible. Key data such as subtest scores should also be included in the report. Tests should be administered by a qualified and experienced psychologist or psychiatrist, and any discrepancies between formal tests results and the child's customary behavior and daily activities should be duly noted and resolved.

Developmental milestone criteria. In the event that a child's young age and/or condition preclude formal testing by a psychologist or psychiatrist experienced in testing children, a comprehensive evaluation covering the full range of developmental activities should be performed. This should consist of a detailed account of the child's daily activities together with direct observations by a professional person; the latter should include indices or manifestations of social, intellectual, adaptive, verbal, motor (posture, locomotion, manipulation), language, emotional, and self-care development for age. The above should then be related by the evaluating or treating physician to established developmental norms of the kind found in any widely used standard pediatrics text.

c. *Profound combined mental-neurological-musculoskeletal impairments*. There are children with profound and irreversible brain damage resulting in total incapacitation. Such children may meet criteria in either neurological, musculoskeletal, and/or mental sections; they should be adjudicated under the criteria most completely substantiated by the medical evidence submitted. Frequently, the most appropriate criteria will be found under the mental impairment section.

112.01 Category of Impairments, Mental and Emotional

112.02 *Chronic brain syndrome*. With arrest of developmental progression for at least six months or loss of previously acquired abilities.

112.03 *Psychosis of infancy and childhood.* Documented by psychiatric evaluation and supported, if necessary, by the results of appropriate standardized psychological tests and manifested by marked restriction in the performance of daily age-appropriate activities; constriction of age-appropriate interests; deficiency of age-appropriate self-care skills; and impaired ability to relate to others; together with persistence of one (or more) of the following:

- A. Significant withdrawal or detachment; or
- B. Impaired sense of reality; or
- C. Bizarre behavior patterns; or
- D. Strong need for maintenance of sameness, with intense anxiety, fear, or anger when change is introduced; or
- E. Panic at threat of separation from parent.

112.04 *Functional nonpsychotic disorders.* Documented by psychiatric evaluation and supported, if necessary, by the results of appropriate standardized psychological tests and manifested by marked restriction in the performance of daily age-appropriate activities; constriction of age-appropriate interests; deficiency of age-appropriate self-care skills; and impaired ability to relate to others; together with persistence of one (or more) of the following:

- A. Psychophysiological disorder (e.g., diarrhea, asthma); or
- B. Anxiety; or
- C. Depression; or
- D. Phobic, obsessive, or compulsive behavior; or
- E. Hypochondriasis; or
- F. Hysteria; or
- G. Asocial or antisocial behavior.

112.05 *Mental retardation.*

- A. Achievement of only those developmental milestones generally acquired by children no more than one-half the child's chronological age; or
- B. IQ of 59 or less; or
- C. IQ of 60-69, inclusive, and a physical or other mental impairment imposing additional and significant restriction of function or developmental progression.

113.00 NEOPLASTIC DISEASES, MALIGNANT

A. *Introduction.* Determination of disability in the growing and developing child with a malignant neoplastic disease is based upon the combined effects of:

- 1. The pathophysiology, histology, and natural history of the tumor; and
- 2. The effects of the currently employed aggressive multimodal therapeutic regimens. Combinations of surgery, radiation, and chemotherapy or prolonged therapeutic schedules impart significant additional morbidity to the child during the period of greatest risk from the tumor itself. This period of highest risk and greatest therapeutically-induced morbidity defines the limits of dis-

ability for most of childhood neoplastic disease.

B. *Documentation.* The diagnosis of neoplasm should be established on the basis of symptoms, signs, and laboratory findings. The site of the primary, recurrent, and metastatic lesion must be specified in all cases of malignant neoplastic diseases. If an operative procedure has been performed, the evidence should include a copy of the operative note and the report of the gross and microscopic examination of the surgical specimen, along with all pertinent laboratory and X-ray reports. The evidence should also include a recent report directed especially at describing whether there is evidence of local or regional recurrence, soft part or skeletal metastases, and significant post therapeutic residuals.

C. *Malignant solid tumors*, as listed under 113.03, include the histiocytosis syndromes except for solitary eosinophilic granuloma. Thus, 113.03 should not be used for evaluating brain tumors (see 111.05) or thyroid tumors, which must be evaluated on the basis of whether they are controlled by prescribed therapy.

D. *Duration of disability* from malignant neoplastic tumors is included in 113.02 and 113.03. Following the time periods designated in these sections, a documented diagnosis itself is no longer sufficient to establish a severe impairment. The severity of a remaining impairment must be evaluated on the basis of the medical evidence.

113.01 Category of Impairments, Neoplastic Diseases—Malignant

113.02 *Lymphoreticular malignant neoplasms.*

- A. Hodgkin's disease with progressive disease not controlled by prescribed therapy; or
- B. Non-Hodgkin's lymphoma. Consider under a disability:

- 1. For 2½ years from time of initial diagnosis; or
- 2. For 2½ years from time of recurrence of active disease.

113.03 *Malignant solid tumors.* Consider under a disability:

- A. For 2 years from the time of initial diagnosis; or
- B. For 2 years from the time of recurrence of active disease.

113.04 *Neuroblastoma.* With one of the following:

- A. Extension across the midline; or
- B. Distant metastases; or
- C. Recurrence; or
- D. Onset at age 1 year or older.

113.05 *Retinoblastoma.* With one of the following:

- A. Bilateral involvement; or
- B. Metastases; or
- C. Extension beyond the orbit; or
- D. Recurrence.

APPENDIX 2 TO PART 220—MEDICAL-
VOCATIONAL GUIDELINES

Sec.

200.00 Introduction.

201.00 Maximum sustained work capability limited to sedentary work as a result of severe medically determinable impairment(s).

202.00 Maximum sustained work capability limited to light work as a result of severe medically determinable impairment(s).

203.00 Maximum sustained work capability limited to medium work as a result of severe medically determinable impairment(s).

204.00 Maximum sustained work capability limited to heavy work (or very heavy work) as a result of severe medically determinable impairment(s).

200.00 *Introduction.* (a) The following rules reflect the major functional and vocational patterns which are encountered in cases which cannot be evaluated on medical considerations alone, where an individual with a severe medically determinable physical or mental impairment(s) is not engaging in substantial gainful activity and the individual's impairment(s) prevents the performance of his or her vocationally relevant past work. They also reflect the analysis of the various vocational factors (i.e., age, education, and work experience) in combination with the individual's residual functional capacity (used to determine his or her maximum sustained work capability for sedentary, light, medium, heavy, or very heavy work) in evaluating the individual's ability to engage in substantial gainful activity in other than his or her vocationally relevant past work. Where the findings of fact made with respect to a particular individual's vocational factors and residual functional capacity coincide with all of the criteria of a particular rule, the rule directs a conclusion as to whether the individual is or is not disabled. However, each of these findings of fact is subject to rebuttal and the individual may present evidence to refute such findings. Where any one of the findings of fact does not coincide with the corresponding criterion of a rule, the rule does not apply in that particular case and, accordingly, does not direct a conclusion of disabled or not disabled. In any instance where a rule does not apply, full consideration must be given to all of the relevant facts of the case in accordance with the definitions and discussions of each factor in the appropriate sections of the regulations.

(b) The existence of jobs in the national economy is reflected in the "Decisions" shown in the rules; i.e., in promulgating the rules, administrative notice has been taken of the numbers of unskilled jobs that exist throughout the national economy at the var-

ious functional levels (sedentary, light, medium, heavy, and very heavy) as supported by the "Dictionary of Occupational Titles" and the "Occupational Outlook Handbook," published by the Department of Labor; the "County Business Patterns" and "Census Surveys" published by the Bureau of the Census; and occupational surveys of light and sedentary jobs prepared for the Social Security Administration by various State employment agencies. Thus, when all factors coincide with the criteria of a rule, the existence of such jobs is established. However, the existence of such jobs for individuals whose remaining functional capacity or other factors do not coincide with the criteria of a rule must be further considered in terms of what kinds of jobs or types of work may be either additionally indicated or precluded.

(c) In the application of the rules, the individual's residual functional capacity (i.e., the maximum degree to which the individual retains the capacity for sustained performance of the physical-mental requirements of jobs), age, education, and work experience must first be determined.

(d) The correct disability decision (i.e., on the issue of ability to engage in substantial gainful activity) is found by then locating the individual's specific vocational profile. If an individual's specific profile is not listed within this appendix 2, a conclusion of disabled or not disabled is not directed. Thus, for example, an individual's ability to engage in substantial gainful work where his or her residual functional capacity falls between the ranges of work indicated in the rules (e.g., the individual who can perform more than light but less than medium work), is decided on the basis of the principles and definitions in the regulations, giving consideration to the rules for specific case situations in this appendix 2. These rules represent various combinations of exertional capabilities, age, education and work experience and also provide an overall structure for evaluation of those cases in which the judgments as to each factor do not coincide with those of any specific rule. Thus, when the necessary judgments have been made as to each factor and it is found that no specific rule applies, the rules still provide guidance for decisionmaking, such as in cases involving combinations of impairments. For example, if strength limitations resulting from an individual's impairment(s) considered with the judgments made as to the individual's age, education and work experience correspond to (or closely approximate) the factors of a particular rule, the adjudicator then has a frame of reference for considering the jobs or types of work precluded by other, nonexertional impairments in terms of numbers of jobs remaining for a particular individual.

(e) Since the rules are predicated on an individual's having an impairment which

manifests itself by limitations in meeting the strength requirements of jobs, they may not be fully applicable where the nature of an individual's impairment does not result in such limitations, e.g., certain mental, sensory, or skin impairments. In addition, some impairments may result solely in postural and manipulative limitations or environmental restrictions. Environmental restrictions are those restrictions which result in inability to tolerate some physical feature(s) of work settings that occur in certain industries or types of work, e.g., an inability to tolerate dust or fumes.

(1) In the evaluation of disability where the individual has solely a nonexertional type of impairment, determination as to whether disability exists shall be based on the principles in the appropriate sections of the regulations, giving consideration to the rules for specific case situations in this appendix 2. The rules do not direct factual conclusions of disabled or not disabled for individuals with solely nonexertional types of impairments.

(2) However, where an individual has an impairment or combination of impairments resulting in both strength limitations and nonexertional limitations, the rules in this subpart are considered in determining first whether a finding of disabled may be possible based on the strength limitations alone and, if not, the rule(s) reflecting the individual's maximum residual strength capabilities, age, education, and work experience provide a framework for consideration of how much the individual's work capability is further diminished in terms of any types of jobs that would be contraindicated by the nonexertional limitations. Also, in these combinations of nonexertional and exertional limitations which cannot be wholly determined under the rules in this appendix 2, full consideration must be given to all of the relevant facts in the case in accordance with the definitions and discussions of each factor in the appropriate sections of the regulations, which will provide insight into the adjudicative weight to be accorded each factor.

201.00 *Maximum sustained work capability limited to sedentary work as a result of severe medically determinable impairment(s).* (a) Most sedentary occupations fall within the skilled, semi-skilled, professional, administrative, technical, clerical, and benchwork classifications. Approximately 200 separate unskilled sedentary occupations can be identified, each representing numerous jobs in the national economy. Approximately 85 percent of these jobs are in the machine trades and benchwork occupational categories. These jobs (unskilled sedentary occupations) may be performed after a short demonstration or within 30 days.

(b) These unskilled sedentary occupations are standard within the industries in which they exist. While sedentary work represents

a significantly restricted range of work, this range in itself is not so prohibitively restricted as to negate work capability for substantial gainful activity.

(c) Vocational adjustment to sedentary work may be expected where the individual has special skills or experience relevant to sedentary work or where age and basic educational competences provide sufficient occupational mobility to adapt to the major segment of unskilled sedentary work. Inability to engage in substantial gainful activity would be indicated where an individual who is restricted to sedentary work because of a severe medically determinable impairment lacks special skills or experience relevant to sedentary work, lacks educational qualifications relevant to most sedentary work (e.g., has a limited education or less) and the individual's age, though not necessarily advanced, is a factor which significantly limits vocational adaptability.

(d) The adversity of functional restrictions to sedentary work at advanced age (55 and over) for individuals with no relevant past work or who can no longer perform vocationally relevant past work and have no transferable skills, warrants a finding of disabled in the absence of the rare situation where the individual has recently completed education which provides a basis for direct entry into skilled sedentary work. Advanced age and a history of unskilled work or no work experience would ordinarily offset any vocational advantages that might accrue by reason of any remote past education, whether it is more or less than limited education.

(e) The presence of acquired skills that are readily transferable to a significant range of skilled work within an individual's residual functional capacity would ordinarily warrant a finding of ability to engage in substantial gainful activity regardless of the adversity of age, or whether the individual's formal education is commensurate with his or her demonstrated skill level. The acquisition of work skills demonstrates the ability to perform work at the level of complexity demonstrated by the skill level attained regardless of the individual's formal educational attainments.

(f) In order to find transferability of skills to skilled sedentary work for individuals who are of advanced age (55 and over), there must be very little, if any, vocational adjustment required in terms of tools, work processes, work settings, or the industry.

(g) Individuals approaching advanced age (age 50-54) may be significantly limited in vocational adaptability if they are restricted to sedentary work. When such individuals have no past work experience or can no longer perform vocationally relevant past work and have no transferable skills, a finding of disabled ordinarily obtains. However, recently completed education which provides

for direct entry into sedentary work will preclude such a finding. For this age group, even a high school education or more (ordinarily completed in the remote past) would have little impact for effecting a vocational adjustment unless relevant work experience reflects use of such education.

(h) The term “younger individual” is used to denote an individual age 18 through 49. For those within this group who are age 45-49, age is a less positive factor than for those who are age 18-44. Accordingly, for such individuals; (1) who are restricted to sedentary work, (2) who are unskilled or have no transferable skills, (3) who have no relevant past work or who can no longer perform vocationally relevant past work, and (4) who are either illiterate or unable to communicate in the English language, a finding of disabled is warranted. On the other hand, age is a more positive factor for those who are under age 45 and is usually not a significant factor in limiting such an individual’s ability to make a vocational adjustment, even an adjustment to unskilled sedentary work, and even where the individual is illiterate or unable to communicate in English. However, a finding of disabled is not precluded for those individuals under age 45 who do not meet all of the criteria of a specific rule and who do not have the ability to perform a full range of sedentary work. The following examples are illustrative: Example 1: An individual under age 45 with a high school education can no longer do past work and is restricted to unskilled sedentary jobs because of a severe medically determinable cardiovascular impairment (which does not meet or equal the listings in appendix 1). A permanent injury of the right hand limits the individual to sedentary jobs which do not require bilateral

manual dexterity. None of the rules in appendix 2 are applicable to this particular set of facts, because this individual cannot perform the full range of work defined as sedentary. Since the inability to perform jobs requiring bilateral manual dexterity significantly compromises the only range of work for which the individual is otherwise qualified (i.e., sedentary), a finding of disabled would be appropriate. Example 2: An illiterate 41 year old individual with mild mental retardation (IQ of 78) is restricted to unskilled sedentary work and cannot perform vocationally relevant past work, which had consisted of unskilled agricultural field work; his or her particular characteristics do not specifically meet any of the rules in appendix 2, because this individual cannot perform the full range of work defined as sedentary. In light of the adverse factors which further narrow the range of sedentary work for which this individual is qualified, a finding of disabled is appropriate.

(i) While illiteracy or the inability to communicate in English may significantly limit an individual’s vocational scope, the primary work functions in the bulk of unskilled work relate to working with things (rather than with data or people) and in these work functions at the unskilled level, literacy or ability to communicate in English has the least significance. Similarly the lack of relevant work experience would have little significance since the bulk of unskilled jobs require no qualifying work experience. Thus, the functional capability for a full range of sedentary work represents sufficient numbers of jobs to indicate substantial vocational scope for those individuals age 18-44 even if they are illiterate or unable to communicate in English.

TABLE NO. 1—RESIDUAL FUNCTIONAL CAPACITY: MAXIMUM SUSTAINED WORK CAPABILITY LIMITED TO SEDENTARY WORK AS A RESULT OF SEVERE MEDICALLY DETERMINABLE IMPAIRMENT(S)

Rule	Age	Education	Previous work experience	Decision
201.01	Advanced age	Limited or less	Unskilled or none	Disabled.
201.02 .....	.....do .....	.....do	Skilled or semiskilled—skills not transferable ¹ .	Do.
201.03 .....	.....do .....	.....do	Skilled or semiskilled—skills transferable ¹ .	Not disabled.
201.04 .....	.....do	High school graduate or more—does not provide for direct entry into skilled work ² .	Unskilled or none	Disabled.
201.05 .....	.....do	High school graduate or more—provides for direct entry into skilled work ².	.....do	Not disabled.
201.06 .....	.....do	High school graduate or more—does not provide for direct entry into skilled work ² .	Skilled or semiskilled—skills not transferable ¹ .	Disabled.
201.07 .....	.....do .....	.....do	Skilled or semiskilled—skills transferable ¹ .	Not disabled.
201.08 .....	.....do	High school graduate or more—provides for direct entry into skilled work ² .	Skilled or semiskilled—skills not transferable ¹ .	Do.
201.09	Closely approaching advanced age.	Limited or less	Unskilled or none	Disabled.

TABLE NO. 1—RESIDUAL FUNCTIONAL CAPACITY: MAXIMUM SUSTAINED WORK CAPABILITY LIMITED TO SEDENTARY WORK AS A RESULT OF SEVERE MEDICALLY DETERMINABLE IMPAIRMENT(S)—Continued

Rule	Age	Education	Previous work experience	Decision
201.10	.....do	.....do	Skilled or semiskilled—skills not transferable.	Do.
201.11	.....do	.....do	Skilled or semiskilled—skills transferable.	Not disabled.
201.12	.....do	High school graduate or more—does not provide for direct entry into skilled work ³ .	Unskilled or none	Disabled.
201.13	.....do	High school graduate or more—provides for direct entry into skilled work ³.	.....do	Not disabled.
201.14	.....do	High school graduate or more—does not provide for direct entry into skilled work ³ .	Skilled or semiskilled—skills not transferable.	Disabled.
201.15	.....do	.....do	Skilled or semiskilled—skills transferable.	Not disabled.
201.16	.....do	High school graduate or more—provides for direct entry into skilled work ³ .	Skilled or semiskilled—skills not transferable.	Do.
201.17	Younger individual age 45–49.	Illiterate or unable to communicate in English.	Unskilled or none	Disabled.
201.18	.....do	Limited or less—at least literate and able to communicate in English.	.....do	Not disabled.
201.19	.....do	Limited or less	Skilled or semiskilled—skills not transferable.	Do.
201.20	.....do	.....do	Skilled or semiskilled—skills transferable.	Do.
201.21	.....do	High school graduate or more	Skilled or semiskilled—skills not transferable.	Do.
201.22	.....do	.....do	Skilled or semiskilled—skills transferable.	Do.
201.23	Younger individual age 18–44.	Illiterate or unable to communicate in English.	Unskilled or none	Do. ⁴
201.24	.....do	Limited or less—at least literate and able to communicate in English.	.....do	Do. ⁴
201.25	.....do	Limited or less	Skilled or semiskilled—skills not transferable.	Do. ⁴
201.26	.....do	.....do	Skilled or semiskilled—skills transferable.	Do. ⁴
201.27	.....do	High school graduate or more	Unskilled or none	Do. ⁴
201.28	.....do	.....do	Skilled or semiskilled—skills not transferable.	Do. ⁴
201.29	.....do	.....do	Skilled or semiskilled—skills transferable.	Do. ⁴

¹ See 201.00(f).
² See 201.00(d).
³ See 201.00(g).
⁴ See 201.00(h).

202.00 *Maximum sustained work capability limited to light work as a result of severe medically determinable impairment(s).* (a) The functional capacity to perform a full range of light work includes the functional capacity to perform sedentary as well as light work. Approximately 1,600 separate sedentary and light unskilled occupations can be identified in eight broad occupational categories, each occupation representing numerous jobs in the national economy. These jobs can be performed after a short demonstration or within

30 days, and do not require special skills or experience.

(b) The functional capacity to perform a wide or full range of light work represents substantial work capability compatible with making a work adjustment to substantial numbers of unskilled jobs and, thus, generally provides sufficient occupational mobility even for severely impaired individuals who are not of advanced age and have sufficient educational competences for unskilled work.

(c) However, for individuals of advanced age who can no longer perform vocationally relevant past work and who have a history of unskilled work experience, or who have only skills that are not readily transferable to a significant range of semi-skilled or skilled work that is within the individual's functional capacity, or who have no work experience, the limitations in vocational adaptability represented by functional restriction to light work warrant a finding of disabled. Ordinarily, even a high school education or more which was completed in the remote past will have little positive impact on effecting a vocational adjustment unless relevant work experience reflects use of such education.

(d) Where the same factors in paragraph (c) of this section regarding education and work experience are present, but where age, though not advanced, is a factor which significantly limits vocational adaptability (i.e., closely approaching advanced age, 50-54) and an individual's vocational scope is further significantly limited by illiteracy or inability to communicate in English, a finding of disabled is warranted.

(e) The presence of acquired skills that are readily transferable to a significant range of semi-skilled or skilled work within an individual's residual functional capacity would ordinarily warrant a finding of not disabled regardless of the adversity of age, or whether

the individual's formal education is commensurate with his or her demonstrated skill level. The acquisition of work skills demonstrates the ability to perform work at the level of complexity demonstrated by the skill level attained regardless of the individual's formal educational attainments.

(f) For a finding of transferability of skills to light work for individuals of advanced age who are closely approaching retirement age (age 60-64), there must be very little, if any, vocational adjustment required in terms of tools, work processes, work settings, or the industry.

(g) While illiteracy or the inability to communicate in English may significantly limit an individual's vocational scope, the primary work functions in the bulk of unskilled work relate to working with things (rather than with data or people) and in these work functions at the unskilled level, literacy or ability to communicate in English has the least significance. Similarly, the lack of relevant work experience would have little significance since the bulk of unskilled jobs require no qualifying work experience. The capability for light work, which includes the ability to do sedentary work, represents the capability for substantial numbers of such jobs. This, in turn, represents substantial vocational scope for younger individuals (age 18-49) even if illiterate or unable to communicate in English.

TABLE NO. 2—RESIDUAL FUNCTIONAL CAPACITY: MAXIMUM SUSTAINED WORK CAPABILITY LIMITED TO LIGHT WORK AS A RESULT OF SEVERE MEDICALLY DETERMINABLE IMPAIRMENT(S)

Rule	Age	Education	Previous work experience	Decision
202.01	Advanced age	Limited or less	Unskilled or none	Disabled.
202.02 .....	.....do .....	.....do	Skilled or semiskilled—skills not transferable.	Do.
202.03 .....	.....do .....	.....do	Skilled or semiskilled—skills transferable ¹ .	Not disabled.
202.04 .....	.....do	High school graduate or more—does not provide for direct entry into skilled work ² .	Unskilled or none	Disabled.
202.05 .....	.....do	High school graduate or more—provides for direct entry into skilled work ².	.....do	Not disabled.
202.06 .....	.....do	High school graduate or more—does not provide for direct entry into skilled work ² .	Skilled or semiskilled—skills not transferable.	Disabled.
202.07 .....	.....do .....	.....do	Skilled or semiskilled—skills transferable ² .	Not disabled.
202.08 .....	.....do	High school graduate or more—provides for direct entry into skilled work ² .	Skilled or semiskilled—skills not transferable.	Do.
202.09	Closely approaching advanced age.	Illiterate or unable to communicate in English.	Unskilled or none	Disabled.
202.10 .....	.....do	Limited or less—At least literate and able to communicate in English.	.....do	Not disabled.
202.11 .....	.....do	Limited or less	Skilled or semiskilled—skills not transferable.	Do.
202.12 .....	.....do .....	.....do	Skilled or semiskilled—skills transferable.	Do.
202.13 .....	.....do	High school graduate or more	Unskilled or none	Do.

TABLE NO. 2—RESIDUAL FUNCTIONAL CAPACITY: MAXIMUM SUSTAINED WORK CAPABILITY LIMITED TO LIGHT WORK AS A RESULT OF SEVERE MEDICALLY DETERMINABLE IMPAIRMENT(S)—Continued

Rule	Age	Education	Previous work experience	Decision
202.14	.....do	.....do	Skilled or semiskilled—skills not transferable.	Do.
202.15	.....do	.....do	Skilled or semiskilled—skills transferable.	Do.
202.16	Younger individual	Illiterate or unable to communicate in English.	Unskilled or none	Do.
202.17	.....do	Limited or less—At least literate and able to communicate in English.	.....do	Do.
202.18	.....do	Limited or less	Skilled or semiskilled—skills not transferable.	Do.
202.19	.....do	.....do	Skilled or semiskilled—skills transferable.	Do.
202.20	.....do	High school graduate or more	Unskilled or none	Do.
202.21	.....do	.....do	Skilled or semiskilled—skills not transferable.	Do.
202.22	.....do	.....do	Skilled or semiskilled—skills transferable.	Do.

¹ See 202.00(f).
² See 202.00(c).

203.00 *Maximum sustained work capability limited to medium work as a result of severe medically determinable impairment(s).* (a) The functional capacity to perform medium work includes the functional capacity to perform sedentary, light, and medium work. Approximately 2,500 separate sedentary, light, and medium occupations can be identified, each occupation representing numerous jobs in the national economy which do not require skills or previous experience and which can be performed after a short demonstration or within 30 days.

(b) The functional capacity to perform medium work represents such substantial work capability at even the unskilled level that a finding of disabled is ordinarily not warranted in cases where a severely impaired individual retains the functional capacity to perform medium work. Even the adversity of advanced age (55 or over) and a work history of unskilled work may be offset by the sub-

stantial work capability represented by the functional capacity to perform medium work. However, an individual with a marginal education and long work experience (i.e., 35 years or more) limited to the performance of arduous unskilled labor, who is not working and is no longer able to perform this labor because of a severe impairment(s), may still be found disabled even though the individual is able to do medium work.

(c) However, the absence of any relevant work experience becomes a more significant adversity for individuals of advanced age (55 and over). Accordingly, this factor, in combination with a limited education or less, militates against making a vocational adjustment to even this substantial range of work and a finding of disabled is appropriate. Further, for individuals closely approaching retirement age (60–64) with a work history of unskilled work and with marginal education or less, a finding of disabled is appropriate.

TABLE NO. 3—RESIDUAL FUNCTIONAL CAPACITY: MAXIMUM SUSTAINED WORK CAPABILITY LIMITED TO MEDIUM WORK AS A RESULT OF SEVERE MEDICALLY DETERMINABLE IMPAIRMENT(S)

Rule	Age	Education	Previous work experience	Decision
203.01	Closely approaching retirement age.	Marginal or none	Unskilled or none	Disabled.
203.02	.....do	Limited or less	None	Do.
203.03	.....do	Limited	Unskilled	Not disabled.
203.04	.....do	Limited or less	Skilled or semiskilled—skills not transferable.	Do.
203.05	.....do	.....do	Skilled or semiskilled—skills transferable.	Do.
203.06	.....do	High school graduate or more	Unskilled or none	Do.
203.07	.....do	High school graduate or more—does not provide for direct entry into skilled work.	Skilled or semiskilled—skills not transferable.	Do.
203.08	.....do	.....do	Skilled or semiskilled—skills transferable.	Do.

TABLE NO. 3—RESIDUAL FUNCTIONAL CAPACITY: MAXIMUM SUSTAINED WORK CAPABILITY LIMITED TO MEDIUM WORK AS A RESULT OF SEVERE MEDICALLY DETERMINABLE IMPAIRMENT(S)—Continued

Rule	Age	Education	Previous work experience	Decision
203.09 .....	.....do	High school graduate or more—provides for direct entry into skilled work.	Skilled or semiskilled—skills not transferable.	Do.
203.10	Advanced age	Limited or less	None	Disabled.
203.11 .....	.....do .....	.....do	Unskilled	Not disabled.
203.12 .....	.....do .....	.....do	Skilled or semiskilled—skills not transferable.	Do.
203.13 .....	.....do .....	.....do	Skilled or semiskilled—skills transferable.	Do.
203.14 .....	.....do	High school graduate or more	Unskilled or none	Do.
203.15 .....	.....do	High school graduate or more—does not provide for direct entry into skilled work.	Skilled or semiskilled—skills not transferable.	Do.
203.16 .....	.....do .....	.....do	Skilled or semiskilled—skills transferable.	Do.
203.17 .....	.....do	High school graduate or more—provides for direct entry into skilled work.	Skilled or semiskilled—skills not transferable.	Do.
203.18	Closely approaching advanced age.	Limited or less	Unskilled or none	Do.
203.19 .....	.....do .....	.....do	Skilled or semiskilled—skills not transferable.	Do.
203.20 .....	.....do .....	.....do	Skilled or semiskilled—skills transferable.	Do.
203.21 .....	.....do	High school graduate or more	Unskilled or none	Do.
203.22 .....	.....do	High school graduate or more—does not provide for direct entry into skilled work.	Skilled or semiskilled—skills not transferable.	Do.
203.23 .....	.....do .....	.....do	Skilled or semiskilled—skills transferable.	Do.
203.24 .....	.....do	High school graduate or more—provides for direct entry into skilled work.	Skilled or semiskilled—skills not transferable.	Do.
203.25	Younger individual	Limited or less	Unskilled or none	Do.
203.26 .....	.....do .....	.....do	Skilled or semiskilled—skills not transferable.	Do.
203.27 .....	.....do .....	.....do	Skilled or semiskilled—skills transferable.	Do.
203.28 .....	.....do	High school graduate or more	Unskilled or none	Do.
203.29 .....	.....do	High school graduate or more—does not provide for direct entry into skilled work.	Skilled or semiskilled—skills not transferable.	Do.
203.30 .....	.....do .....	.....do	Skilled or semiskilled—skills transferable.	Do.
203.31 .....	.....do	High school graduate or more—provides for direct entry into skilled work.	Skilled or semiskilled—skills not transferable.	Do.

204.00 *Maximum sustained work capability limited to heavy work (or very heavy work) as a result of severe medically determinable impairment(s).* The residual functional capacity to perform heavy work or very heavy work includes the functional capability for work at the lesser functional levels as well, and represents substantial work capability for jobs in the national economy at all skill and physical demand levels. Individuals who retain the functional capacity to perform heavy work (or very heavy work) ordinarily will not have a severe impairment or will be able to do their past work—either of which

would have already provided a basis for a decision of “not disabled”. Environmental restrictions ordinarily would not significantly affect the range of work existing in the national economy for individuals with the physical capability for heavy work (or very heavy work). Thus an impairment which does not preclude heavy work (or very heavy work) would not ordinarily be the primary reason for unemployment, and generally is sufficient for a finding of not disabled, even though age, education, and skill level of prior work experience may be considered adverse.

APPENDIX 3 TO PART 220—RAILROAD RETIREMENT BOARD OCCUPATIONAL DISABILITY STANDARDS

1. INTRODUCTION

1.01 The Board uses this appendix to adjudicate the occupational disability claims of employees with medical conditions and job titles covered by the Tables in this appendix. The Tables are divided into “Body Parts”, with each Body Part further divided by job title. Under each job title there is a list of impairments and tests with accompanying test results which establish a finding of “D” (disabled). The use of these Tables is a three-step process. In the first step we determine whether the employee’s regular railroad occupation is covered by the Tables; next we establish the existence of an impairment covered by the Tables; finally, we reach a disability determination. If we do not find an employee disabled under these Tables, the employee may still be found disabled using Independent Case Evaluation (ICE), as explained in subpart C of this part.

1.02 The Cancer Tables are treated in a different way than other body systems. Different types of cancer and their treatments have different functional impacts. In the Cancer Tables the impact of the impairment is seen as being significant or not significant. Therefore, these tables contain an “S” (significant) which is equivalent to a “D” rating. A detailed explanation of how to use those tables is in that section. The steps to use the remaining Tables are explained below:

2. CONFIRMING THE IMPAIRMENT

2.01 Once we determine that the employee’s regular railroad occupation is covered by the Job Titles in the Tables, we must determine the existence of an impairment covered by the Tables. This is done through the use of Confirmatory Tests. These tests can include information from medical records, surgical or operative reports, or specific diagnostic test results. Confirmatory Tests are listed in the initial section regarding each Body Part covered in the Tables. If an impairment cannot be confirmed because of inconsistent medical information, ICE may be required.

2.02 There are two types of Confirmatory Tests as follows.

2.03 “Highly Recommended” Tests—The designation of a confirmatory test as being “highly recommended” means that the test is almost always performed to confirm the existence of the impairment. For many conditions, only one “highly recommended” test finding is suggested to confirm the impairment. However, there may be times when that test is not available or is negative, but other more detailed testing confirms the impairment.

2.04 *Example A:* To confirm the condition of pulmonary hypertension, the Tables under Body Part C., Cardiac, designate as “highly recommended”: an electrocardiogram which indicates definite right ventricular hypertrophy. However, the impairment may also be confirmed by insertion of a Swan-Ganz catheter into the pulmonary artery and the pulmonary artery pressure measured directly.

2.05 There may be some conditions for which several “highly recommended” tests are suggested to confirm an impairment. In these circumstances, we will use all “highly recommended” tests to establish the existence of the impairment.

2.06 *Example B:* Under Body Part E., Lumbar Sacral Spine, three highly recommended medical findings are identified for the diagnosis of chronic back pain, not otherwise specified. These findings include:

A. A history of back pain under medical treatment for at least one year, and

B. A history of back pain unresponsive to therapy for at least one year, and

C. A history of back pain with functional limitations for at least one year.

2.07 All three of these criteria must be satisfied to confirm the existence of chronic back pain.

2.08 Sometimes the employee may have undergone detailed testing which is as reliable as one of the “highly recommended” tests listed in the Tables. In cases where an impairment has not been confirmed by one of the designated “highly recommended” tests, the impairment may still be confirmed by “recommended” tests (see below) or by evidence acceptable under section 220.27 of this part.

2.09 Recommended Tests—The designation of a confirmatory test as “recommended” means that the test need not be performed, or be positive, to confirm the impairment. However, a positive test provides significant support for confirming the impairment. If there are no “highly recommended” tests for confirming the impairment, at least one of the “recommended” tests should be positive.

2.10 There are two categories of recommended tests which are described below.

A. *Imaging studies*—These studies can include MRI, CAT scan, myelogram, or plain film x-rays. For conditions where several of these imaging studies are identified as “recommended” tests, at least one of the test results should be positive and meet the confirmatory test criteria. For some conditions, such as degenerative disc condition, there are several equivalent imaging methods to confirm a diagnosis.

B. *Other tests*—This category of tests refers to non-imaging studies.

2.11 If there are no “highly recommended” confirmatory tests designated to confirm an impairment and the “recommended” confirmatory tests only include non-imaging

procedures, at least one of these tests should be positive to confirm the impairment. The greater the number of tests that are positive, the greater the confidence that the correct diagnosis has been established.

2.12 *Example:* Under Body Part C., Cardiac, the diagnostic confirmatory tests for ventricular ectopy, a cardiac arrhythmia, include the following “recommended” tests:

- A. Medical record review, i.e., a review of the claimant’s medical records, or
- B. Holter monitoring, or
- C. Provocative testing producing a definite arrhythmia.

2.13 In this situation, only one of the “recommended” confirmatory tests need be positive to confirm the impairment. However, the more tests that are positive, the stronger the support for the diagnosis.

2.14 In no circumstance will the Board require that an invasive test be performed to confirm an impairment. Several of the Confirmatory Tests which are described in the Tables are invasive and it is not the intention of the Board to suggest that these be performed. The inclusion of invasive tests in the Tables Confirmatory Tests section is intended to help the Board evaluate the significance of findings from such tests that may have already been performed and which are part of the submitted medical record.

2.15 If an employee’s impairment(s) cannot be confirmed by use of the confirmatory tests listed in the Tables, it still may be confirmed by medical evidence described in section 220.27 of this part. However, if a claimant’s impairment(s) cannot be confirmed through use of the Tables or under section 220.27, and the medical evidence is complete and in concordance, the claimant will be found not disabled.

3. DISABILITY DETERMINATION

3.01 Once the Board determines that the employee’s regular railroad occupation is covered by one of the Job Titles in the Tables and that his or her alleged impairment fits into a Body Part covered by the Tables and can be confirmed, we examine the results of any of the disability tests listed under the impairment. If the results from any of these tests indicate a “D” finding, the employee is found disabled. If none of the test results indicate a “D” finding, then the employee’s claim is evaluated using ICE.

3.02 *Example:* A trainman has angina as confirmed by the recommended tests under Body Part A: Cardiac—Angina. An echocardiogram shows that he has poor ejection fraction $\leq 35\%$. The employee is rated disabled. If none of the results of the listed disability tests match the results required for a “D” finding, then the employee’s claim is evaluated under ICE.

TABLES

- A. Cancer
- B. Endocrine
- C. Cardiac
- D. Respiratory
- E. Lumbar Sacral Spine
- F. Cervical Spine
- G. Shoulder and Elbow
- H. Hand and Arm
- I. Hip
- J. Knee
- K. Ankle and Foot

A. CANCER

Cancer

Cancer conditions can be viewed as belonging to one of three categories.

Category 1: Significant impact on functional capacity or anticipated life span.

Category 2: Intermediate impact on functional capacity; large individual variability.

Category 3: No significant impact on functional capacity or expected life span.

The factors that are considered in developing these categories include the following:

Type of Cancer

The functional impact of different malignancies varies tremendously and each malignancy has to be considered on an individual basis.

Magnitude of Disease

The disability standards are based upon the magnitude or extent of disease. The extent of disease affects both anticipated life span and the functional capacity or work ability of the individual. Localized cancer including cancer “in situ” can frequently be completely cured and not have an impact on functional capacity or life span. In contrast, many cancers that have distant or significant regional spread generally have a poor prognosis. The magnitude or extent of disease is classified into three categories: local, regional and distant.

The criteria which are used to classify a cancer into one of the three categories are based upon the distillation of several staging methods into a single system [Miller, et al. (1992). Cancer Statistics Review, 1973-1989; NIH Publication No. 92-2789].

Effects of Treatment

Although some types of cancer may be potentially curable with radical surgery and/or radiation therapy, the treatment regimen may result in a significant impairment that could affect functional capacity and ability to work. For example, a person with a laryngeal tumor which had spread regionally could be cured by a complete laryngectomy and radiotherapy. However, this treatment

could result in a loss of speech and significantly impair the individual's communicative skills or ability to use certain types of respiratory protective equipment.

Prognosis

Some cancers may have minimal impact on a person's functional capacity, but have a very poor prognosis with respect to life expectancy. For example, an individual with early stage brain cancer may be minimally impaired, but have a poor prognosis and minimal potential for surviving longer than two years. Five and two year survival data are presented in the Cancer Disability Guideline Table which follows.

The Cancer Disability Guideline Table provides information concerning the probability of survival for five years for local, regional, and distant disease for each type of malignancy. In addition, two-year survival data are also presented for all disease stages. The five-year survival data are based upon data collected from population-based registries in Connecticut, New Mexico, Utah, Hawaii, Atlanta, Detroit, Seattle and the San Francisco and East Bay area between 1983 and 1987 (Miller, 1992). The two-year data are from a cohort study initially diagnosed in 1988.

Assessment

The malignancies are classified as disabling (Category 1), potentially disabling (Category 2) and non-disabling (Category 3). Category 2 conditions must be evaluated with respect to how the worker's tumor affects the worker's ability to perform the job and an assessment of his life span.

Information concerning the potential impact of the malignancy on a worker's ability to perform a job is identified in the Functional Impact column in the table. All railroad occupations in the Tables are considered together. Functional impacts are classified as significant if the treatment or sequelae from treatment including radiotherapy, chemotherapy and/or surgery is likely to impair the worker from performing the job. If the treatment results in a significant impairment of another organ system, the individual should be evaluated for disability associated with impairment of that body part. For example, a person undergoing an amputation for a bone malignancy would have to be evaluated for an amputation of that body part. For many cancers, it is difficult to make generalizations regarding the level of impairment that will occur after the person has initiated or completed treatment. Nonsignificant impacts include those that are unlikely to have any effect on the individual's work capacity.

Cancer type	2-year ¹	5-year ¹	Disability status ²	Functional impact ³
Brain:				
Local		26	1	S
Regional		27.9	1	S
Distant		23.6	1	S
Female Breast:				
Regional		71.1	2	S
Distant		17.8	1	S
Colon:				
Local		91	2	S
Regional		60.1	2	S
Distant		6	1	S
Rectal:				
Local		84.5	2	S
Regional		50.7	2	S
Distant		5.3	1	S
Esophagus:				
Local		18.5	1	S
Regional		5.2	1	S
Distant		1.8	1	S
Hodgkin's Disease: ⁴				
Stage 1		90-95	3	S
Stage 2		86	2	S
Stage 3		<80	2	S
Stage 4		<80	1	S
Kidney/Renal Pelvis:				
Local		85.4	3	S
Regional		56.3	2	S
Distant		9	1	S
Larynx:				
Local		84.2	2	S
Regional		52.5	2	S
Distant		24	1	S
Acute Lymphocytic Leukemia:				
All		51.1	2	S
Chronic Lymphocytic Leukemia:				
All		66.2	2	S

Cancer type	2-year ¹	5-year ¹	Disability status ²	Functional impact ³
Acute Myelogenous Leukemia:				
All		9.7	1	S
Chronic Myelogenous Leukemia:				
All		21.7	1	S
Liver/Intrahepatic Bile Duct:				
Local		15.1	1	S
Regional		5.8	1	S
Distant		1.9	1	S
Lung/Bronchus: ⁵				
Local		45.6	2	S
Regional		13.1	1	S
Distant		1.3	1	S
Melanomas of Skin:				
Regional		53.6	2	S
Distant		12.8	1	S
Oral Cavity/Pharyngeal:				
Local		76.2	2	S
Regional		40.9	2	S
Distant		18.7	1	S
Pancreas:				
Local		6.1	1	S
Regional		3.7	1	S
Distant		1.4	1	S
Prostate:				
Local		91	3	S
Regional		80.4	2	S
Distant		28	1	S
Stomach:				
Local		55.4	1	S
Regional		17.3	1	S
Distant		2.1	1	S
Testicular:				
Distant		65.5	1	S
Thyroid:				
Regional		93.1	3	S
Distant		47.2	1	S
Bladder:				
Regional		46	2	S
Distant		9.1	1	S

¹Source of 2 and 5 year survival data: Miller BA et al. Cancer Statistics Review 1973-1989. NIH Publication No. 92-2789.
²Disability Status:
 Category 1: Significant impact on functional capacity or life span.
 Category 2: Intermediate impact.
 Category 3: No significant impact on functional capacity or life span.
³Functional Impacts:
 (S) Significant—significant potential for the effects of treatment (radiotherapy, chemotherapy, surgery) to affect functional capacity.
⁴Hodgkin's disease data presented for each stage derived from American Cancer Society. American Cancer Society Textbook reference for unstaged cancer is derived from Cancer Statistics Review (See 3). In addition to other data, see: American Cancer Society Textbook of Clinical Oncology. Eds: Holleb AI, Fink DJ, Murphy GP, Atlanta: American Cancer Society, Inc. 1991.)
⁵Small cell carcinoma is classified as a 1.

B. Endocrine

Confirmatory test	Minimum result	Requirements
BODY PART: ENDOCRINE CONFIRMATORY TESTS		
Diabetes, requiring insulin (IDDM): Medical record review	Confirmation of condition and need for insulin use.	Highly recommended.
Disability test	Test result	Disability classification
BODY PART: ENDOCRINE JOB TITLE: ENGINEER		
Diabetes, requiring insulin (IDDM): Medical record review	Confirmation of condition and need for insulin use.	D

C. Cardiac

Confirmatory test	Minimum result	Requirements
BODY PART: CARDIAC CONFIRMATORY TESTS		
Angina:		
Medical record review	Confirmed history of ischemia including copies of electrocardiogram.	Recommended.
Stress test	Definite ischemia on exercise test	Recommended.
Thallium study	Definite ischemia with exercise	Recommended.
Aortic valve disease:		
Cardiac catheterization	Proven and significant	Recommended.
Echocardiogram	Significant valve disease	Recommended.
Coronary artery disease:		
Medical record review	Documented ischemia with electrocardiogram confirmation.	Recommended.
Medical record review	Documented myocardial infarction	Recommended.
Stress test	Positive	Recommended.
Thallium study	Definite ischemia with exercise	Recommended.
Angiography	Definite occlusion (≤60%) of one vessel	Recommended.
Cardiomyopathy:		
Echocardiogram	Proven ejection fraction ≤35%	Recommended.
Catheterization	Poor global function and not coronary artery disease.	Recommended.
Hypertension:		
Medical record review	Documentation of hypertension for one year.	Highly recommended.
Medical record review	Definite diagnosis by cardiologist or internist.	Highly recommended.
Medical record review	Confirmation of medication use	Highly recommended.
Arrhythmia: heart block:		
Medical record review	Proven episode with electrocardiogram confirmation.	Recommended.
Electrocardiogram	Documentation of arrhythmia	Recommended.
Mitral valve disease:		
Cardiac catheterization	Significant valve disease	Recommended.
Echocardiogram	Significant valve disease	Recommended.
Pericardial disease:		
Medical record review	Confirmed by cardiologist or internist	Highly recommended.
Pulmonary hypertension:		
Physical examination	Increased pulmonic sound or pulmonary ejection murmur by cardiologist or internist.	Recommended.
Electrocardiogram	Definite right ventricular hypertension	Highly recommended.
Ventricular ectopy:		
Medical record review	Definite episode within one year	Recommended.
Holter monitoring	Definite arrhythmia	Recommended.
Provocative testing	Positive response	Recommended.
Arrhythmia: supraventricular tachycardia:		
Medical record review	Definite episode within one year	Recommended.
Holter monitoring	Definite arrhythmia	Recommended.
Post heart transplant:		
Medical record review	Documented	Highly recommended.

Disability test	Test result	Disability classification
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**BODY PART: CARDIAC
JOB TITLE: TRAINMAN**

Angina:		
Echocardiogram	Poor ejection fraction ≤35%	D
Stress test	Peak exercise ≤7 METS	D
Medical record review	Unstable as diagnosed by cardiologist	D
Stress test	Documented hypotensive response	D
Stress test: significant ST changes	Definite ischemia ≤7 METS	D
Aortic valve disease:		
Cardiac catheterization	Aortic gradient 25–50 mm HG.	
Echocardiogram	Poor ejection fraction ≤35%	D
Stress test	Peak exercise ≤7 METS	D
Coronary artery disease:		
Myocardial infarction	Multiple infarctions	D
Echocardiogram	Confirmed ventricular aneurysm	D
Cardiac catheterization	Aortic gradient 25–50 mm Hg	D
Cardiac catheterization	Poor ejection fraction ≤35%	D

Disability test	Test result	Disability classification
Stress test	Peak exercise ≤ 7 METS	D
Medical record review	Unstable as diagnosed by a Cardiologist ...	D
Stress test	Documented hypotensive response	D
Stress test	Definite ischemia ≤ 7 METS	D
Isotope, e.g., thallium study	Definite ischemia ≤ 7 METS	D
Cardiomyopathy:		
Cardiac catheterization	Poor ejection fraction $\leq 35\%$	D
Echocardiogram	Poor ejection fraction $\leq 35\%$	D
Stress test	Peak exercise ≤ 7 METS	D
Hypertension:		
Medical record review	Diastolic ≤ 120 and systolic ≤ 160 , 50% of the time and evidence of end organ damage (blood creatinine ≤ 2 ; urinary protein $\leq 1/2$ gm; or EKG evidence of ischemia).	D
Arrhythmia: heart block:		
Holter	Documented asystole length $\leq 1.5-2$ seconds.	D
Medical record review	Documented syncope with proven arrhythmia.	D
Mitral valve disease:		
Cardiac catheterization	Mitral valve gradient ≥ 5 mm Hg	D
Cardiac catheterization	Mitral regurgitation severe	D
Cardiac catheterization	Poor ejection fraction $\leq 35\%$	D
Echocardiogram	Poor ejection fraction $\leq 35\%$	D
Stress test	Peak exercise ≤ 7 METS	D
Pericardial disease:		
Cardiac catheterization	Poor ejection fraction $\leq 35\%$	D
Echocardiogram	Poor ejection fraction $\leq 35\%$	D
Ventricular ectopy:		
Medical record review	Documented life threatening arrhythmia	D
Holter	Uncontrolled ventricular rhythm	D
Medical record review	Documented related syncope	D
Arrhythmia: supraventricular tachycardia:		
Medical record review	Documented related syncope	D
Post heart transplant:		
Medical record review	Post heart transplant	D

**BODY PART: CARDIAC
JOB TITLE: ENGINEER**

Angina:		
Echocardiogram	Poor ejection fraction $\leq 35\%$	D
Stress test	Peak exercise ≤ 5 METS	D
Medical record review	Unstable as diagnosed by cardiologist	D
Stress test	Documented hypotensive response	D
Stress test: significant ST changes	Definite ischemia ≤ 5 METS	D
Aortic valve disease:		
Cardiac catheterization	Aortic gradient 25-50 mm HG	D
Echocardiogram	Poor ejection fraction $\leq 35\%$	D
Stress test	Peak exercise ≤ 5 METS	D
Coronary artery disease:		
Myocardial infarction	Multiple infarctions	D
Echocardiogram	Confirmed ventricular aneurysm	D
Cardiac catheterization	Aortic gradient 25-50 mm Hg	D
Cardiac catheterization	Poor ejection fraction $\leq 35\%$	D
Stress test	Peak exercise ≤ 5 METS	D
Medical record review	Unstable as diagnosed by a Cardiologist ...	D
Stress test	Documented hypotensive response	D
Stress test	Definite ischemia ≤ 5 METS	D
Isotope, e.g., thallium study	Definite ischemia ≤ 5 METS	D
Cardiomyopathy:		
Cardiac catheterization	Poor ejection fraction $\leq 35\%$	D
Echocardiogram	Poor ejection fraction $\leq 35\%$	D
Stress test	Peak exercise ≤ 5 METS	D
Hypertension:		
Medical record review	Diastolic ≤ 120 and systolic ≤ 160 , 50% of the time and evidence of end organ damage (blood creatinine ≤ 2 ; urinary protein $\leq 1/2$ gm; or EKG evidence of ischemia).	D
Arrhythmia: heart block:		
Holter	Documented asystole length $\leq 1.5-2$ seconds.	D

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Disability test	Test result	Disability classification
Medical record review	Documented syncope with proven arrhythmia.	D
Mitral valve disease:		
Cardiac catheterization	Mitral valve gradient ≥ 10 mm Hg	D
Cardiac catheterization	Mitral regurgitation severe	D
Cardiac catheterization	Poor ejection fraction $\leq 35\%$	D
Echocardiogram	Poor ejection fraction $\leq 35\%$	D
Stress test	Peak exercise ≤ 5 METS	D
Pericardial disease:		
Cardiac catheterization	Poor ejection fraction $\leq 35\%$	D
Echocardiogram	Poor ejection fraction $\leq 35\%$	D
Ventricular ectopy:		
Medical record review	Documented life threatening arrhythmia	D
Holter	Uncontrolled ventricular rhythm	D
Medical record review	Documented related syncope	D
Arrhythmia: supraventricular tachycardia:		
Medical record review	Documented related syncope	D
Post heart transplant:		
Medical record review	Post heart transplant	D

**BODY PART: CARDIAC
JOB TITLE: DISPATCHER**

Angina:		
Echocardiogram	Poor ejection fraction $\leq 35\%$	D
Stress test	Peak exercise ≤ 5 METS	D
Medical record review	Unstable as diagnosed by cardiologist	D
Stress test	Documented hypotensive response	D
Stress test: significant ST changes	Definite ischemia ≤ 5 METS	D
Aortic valve disease:		
Cardiac catheterization	Aortic gradient 25–50 mm Hg	D
Echocardiogram	Poor ejection fraction $\leq 35\%$	D
Stress test	Peak exercise ≤ 5 METS	D
Coronary artery disease:		
Myocardial infarction	Multiple infarctions	D
Echocardiogram	Confirmed ventricular aneurysm	D
Cardiac catheterization	Aortic gradient 25–50 mm Hg	D
Cardiac catheterization	Poor ejection fraction $\leq 35\%$	D
Stress test	Peak exercise ≤ 5 METS	D
Medical record review	Unstable as diagnosed by cardiologist	D
Stress test	Documented hypotensive response	D
Stress test	Definite ischemia ≤ 5 METS	D
Isotope, e.g., thallium study	Definite ischemia ≤ 5 METS	D
Cardiomyopathy:		
Cardiac catheterization	Poor ejection fraction $\leq 35\%$	D
Echocardiogram	Poor ejection fraction $\leq 35\%$	D
Stress test	Peak exercise ≤ 5 METS	D
Hypertension:		
Medical record review	Diastolic ≤ 120 and systolic ≤ 160 , 50% of the time and evidence of end organ damage (blood creatinine ≤ 2 ; urinary protein $\leq 1/2$ gm; or EKG evidence of ischemia).	D
Arrhythmia: heart block:		
Holter	Documented asystole length ≤ 1.5 – 2 seconds.	D
Medical record review	Documented syncope with proven arrhythmia.	D
Mitral valve disease:		
Cardiac catheterization	Mitral valve gradient ≥ 10 mm Hg	D
Cardiac catheterization	Mitral regurgitation severe	D
Cardiac catheterization	Poor ejection fraction $\leq 35\%$	D
Echocardiogram	Poor ejection fraction $\leq 35\%$	D
Stress test	Peak exercise ≤ 5 METS	D
Pericardial disease:		
Cardiac catheterization	Poor ejection fraction $\leq 35\%$	D
Echocardiogram	Poor ejection fraction $\leq 35\%$	D
Ventricular ectopy:		
Medical record review	Documented life threatening arrhythmia	D
Holter	Uncontrolled ventricular rhythm	D
Medical record review	Documented related syncope	D
Arrhythmia: supraventricular tachycardia:		
Medical record review	Documented related syncope	D

Disability test	Test result	Disability classification
Post heart transplant: Medical record review	Post heart transplant	D

**BODY PART: CARDIAC
JOB TITLE: CARMAN**

Angina:		
Echocardiogram	Poor ejection fraction $\leq 35\%$	D
Stress test	Peak exercise ≤ 5 METS	D
Medical record review	Unstable as diagnosed by cardiologist	D
Stress test	Documented hypotensive response	D
Stress test: significant ST changes	Definite ischemia ≤ 5 METS	D
Aortic valve disease:		
Cardiac catheterization	Aortic gradient 25-50 mm HG.	
Echocardiogram	Poor ejection fraction $\leq 35\%$	D
Stress test	Peak exercise ≤ 5 METS	D
Coronary artery disease:		
Myocardial infarction	Multiple infarctions	D
Echocardiogram	Confirmed ventricular aneurysm	D
Cardiac catheterization	Aortic gradient 25-50 mm Hg	D
Cardiac catheterization	Poor ejection fraction $\leq 35\%$	D
Stress test	Peak exercise ≤ 5 METS	D
Medical record review	Unstable as diagnosed by a Cardiologist ...	D
Stress test	Documented hypotensive response	D
Stress test	Definite ischemia ≤ 5 METS	D
Isotope, e.g., thallium study	Definite ischemia ≤ 5 METS	D
Cardiomyopathy:		
Cardiac catheterization	Poor ejection fraction $\leq 35\%$	D
Echocardiogram	Poor ejection fraction $\leq 35\%$	D
Stress test	Peak exercise ≤ 5 METS	D
Hypertension:		
Medical record review	Diastolic ≤ 120 and systolic ≤ 160 , 50% of the time and evidence of end organ damage (blood creatinine ≤ 2 ; urinary protein $\leq 1\frac{1}{2}$ gm; or EKG evidence of ischemia).	D
Arrhythmia: heart block:		
Holter	Documented asystole length $\leq 1.5-2$ seconds.	D
Medical record review	Documented syncope with proven arrhythmia.	D
Mitral valve disease:		
Cardiac catheterization	Mitral valve gradient ≥ 10 mm Hg	D
Cardiac catheterization	Mitral regurgitation severe	D
Cardiac catheterization	Poor ejection fraction $\leq 35\%$	D
Echocardiogram	Poor ejection fraction $\leq 35\%$	D
Stress test	Peak exercise ≤ 5 METS	D
Pericardial disease:		
Cardiac catheterization	Poor ejection fraction $\leq 35\%$	D
Echocardiogram	Poor ejection fraction $\leq 35\%$	D
Ventricular ectopy:		
Medical record review	Documented life threatening arrhythmia	D
Holter	Uncontrolled ventricular rhythm	D
Medical record review	Documented related syncope	D
Arrhythmia: supraventricular tachycardia:		
Medical record review	Documented related syncope	D
Post heart transplant:		
Medical record review	Post heart transplant	D

**BODY PART: CARDIAC
JOB TITLE: SIGNALMAN**

Angina:		
Echocardiogram	Poor ejection fraction $\leq 35\%$	D
Stress test	Peak exercise ≤ 7 METS	D
Medical record review	Unstable as diagnosed by cardiologist	D
Stress test	Documented hypotensive response	D
Stress test: significant ST changes	Definite ischemia ≤ 7 METS	D
Aortic valve disease:		
Cardiac catheterization	Aortic gradient 25-50 mm HG	D
Echocardiogram	Poor ejection fraction $\leq 35\%$	D
Stress test	Peak exercise ≤ 7 METS	D
Coronary artery disease:		
Myocardial infarction	Multiple infarctions	D

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Disability test	Test result	Disability classification
Echocardiogram	Confirmed ventricular aneurysm	D
Cardiac catheterization	Aortic gradient 25–50 mm Hg	D
Cardiac catheterization	Poor ejection fraction ≤35%	D
Stress test	Peak exercise ≤7 METS	D
Medical record review	Unstable as diagnosed by cardiologist	D
Stress test	Documented hypotensive response	D
Stress test	Definite ischemia ≤7 METS	D
Isotope, e.g., thallium study	Definite ischemia ≤7 METS	D
Cardiomyopathy:		
Cardiac catheterization	Poor ejection fraction ≤35%	D
Echocardiogram	Poor ejection fraction ≤35%	D
Stress test	Peak exercise ≤7 METS	D
Hypertension:		
Medical record review	Diastolic ≤120 and systolic ≤160, 50% of the time and evidence of end organ damage (blood creatinine ≤2; urinary protein ≤½ gm; or EKG evidence of ischemia).	D
Arrhythmia: heart block		
Holter	Documented asystole length ≤1.5–2 seconds.	D
Medical record review	Documented syncope with proven arrhythmia.	D
Mitral valve disease:		
Cardiac catheterization	Mitral valve gradient ≥5 mm Hg	D
Cardiac catheterization	Mitral regurgitation severe	D
Cardiac catheterization	Poor ejection fraction ≤35%	D
Echocardiogram	Poor ejection fraction ≤35%	D
Stress test	Peak exercise ≤7 METS	D
Pericardial disease:		
Cardiac catheterization	Poor ejection fraction ≤35%	D
Echocardiogram	Poor ejection fraction ≤35%	D
Ventricular ectopy:		
Medical record review	Documented life threatening arrhythmia	D
Holter	Uncontrolled ventricular rhythm	D
Medical record review	Documented related syncope	D
Arrhythmia: supraventricular tachycardia:		
Medical record review	Documented related syncope	D
Post heart transplant:		
Medical record review	Post heart transplant	D

**BODY PART: CARDIAC
JOB TITLE: TRACKMAN**

Angina:		
Echocardiogram	Poor ejection fraction ≤35%	D
Stress test	Peak exercise ≤7 METS	D
Medical record review	Unstable as diagnosed by cardiologist	D
Stress test	Documented hypotensive response	D
Stress test: significant ST changes	Definite ischemia ≤7 METS	D
Aortic valve disease:		
Cardiac catheterization	Aortic gradient 25–50 mm HG	D
Echocardiogram	Poor ejection fraction ≤35%	D
Stress test	Peak exercise ≤7 METS	D
Coronary artery disease:		
Myocardial infarction	Multiple infarctions	D
Echocardiogram	Confirmed ventricular aneurysm	D
Cardiac catheterization	Aortic gradient 25–50 mm Hg	D
Cardiac catheterization	Poor ejection fraction ≤35%	D
Stress test	Peak exercise ≤7 METS	D
Medical record review	Unstable as diagnosed by a cardiologist	D
Stress test	Documented hypotensive response	D
Stress test	Definite ischemia ≤7 METS	D
Isotope, e.g., thallium study	Definite ischemia ≤7 METS	D
Cardiomyopathy:		
Cardiac catheterization	Poor ejection fraction ≤35%	D
Echocardiogram	Poor ejection fraction ≤35%	D
Stress test	Peak exercise ≤7 METS	D
Hypertension:		
Medical record review	Diastolic ≤120 and systolic ≤160, 50% of the time and evidence of end organ damage (blood creatinine ≤2; urinary protein ≤½ gm; or EKG evidence of ischemia).	D

Disability test	Test result	Disability classification
Arrhythmia: heart block:		
Holter	Documented asystole length ≤ 1.5 –2 seconds.	D
Medical record review	Documented syncope with proven arrhythmia.	D
Mitral valve disease:		
Cardiac catheterization	Mitral valve gradient ≥ 5 mm Hg	D
Cardiac catheterization	Mitral regurgitation severe	D
Cardiac catheterization	Poor ejection fraction $\leq 35\%$	D
Echocardiogram	Poor ejection fraction $\leq 35\%$	D
Stress test	Peak exercise ≤ 7 METS	D
Pericardial disease:		
Cardiac catheterization	Poor ejection fraction $\leq 35\%$	D
Echocardiogram	Poor ejection fraction $\leq 35\%$	D
Ventricular ectopy:		
Medical record review	Documented life threatening arrhythmia	D
Holter	Uncontrolled ventricular rhythm	D
Medical record review	Documented related syncope	D
Arrhythmia: supraventricular tachycardia:		
Medical record review	Documented related syncope	D
Post heart transplant:		
Medical record review	Post heart transplant	D

**BODY PART: CARDIAC
JOB TITLE: MACHINIST**

Angina:		
Echocardiogram	Poor ejection fraction $\leq 35\%$	D
Stress test	Peak exercise ≤ 5 METS	D
Medical record review	Unstable as diagnosed by cardiologist	D
Stress test	Documented hypotensive response	D
Stress test: significant ST changes	Definite ischemia ≤ 5 METS	D
Aortic valve disease:		
Cardiac catheterization	Aortic gradient 25–50 mm HG.	
Echocardiogram	Poor ejection fraction $\leq 35\%$	D
Stress test	Peak exercise ≤ 5 METS	D
Coronary artery disease:		
Myocardial infarction	Multiple infarctions	D
Echocardiogram	Confirmed ventricular aneurysm	D
Cardiac catheterization	Aortic gradient 25–50 mm Hg	D
Cardiac catheterization	Poor ejection fraction $\leq 35\%$	D
Stress test	Peak exercise ≤ 5 METS	D
Medical record review	Unstable as diagnosed by a cardiologist	D
Stress test	Documented hypotensive response	D
Stress test	Definite ischemia ≤ 5 METS	D
Isotope, e.g., thallium study	Definite ischemia ≤ 5 METS	D
Cardiomyopathy:		
Cardiac catheterization	Poor ejection fraction $\leq 35\%$	D
Echocardiogram	Poor ejection fraction $\leq 35\%$	D
Stress test	Peak exercise ≤ 5 METS	D
Hypertension:		
Medical record review	Diastolic ≤ 120 and systolic ≤ 160 , 50% of the time and evidence of end organ damage (blood creatinine ≤ 2 ; urinary protein $\leq \frac{1}{2}$ gm; or EKG evidence of ischemia).	D
Arrhythmia: heart block:		
Holter	Documented asystole length ≤ 1.5 –2 seconds.	D
Medical record review	Documented syncope with proven arrhythmia.	D
Mitral valve disease:		
Cardiac catheterization	Mitral valve gradient ≥ 10 mm Hg	D
Cardiac catheterization	Mitral regurgitation severe	D
Cardiac catheterization	Poor ejection fraction $\leq 35\%$	D
Echocardiogram	Poor ejection fraction $\leq 35\%$	D
Stress test	Peak exercise ≤ 5 METS	D
Pericardial disease:		
Cardiac catheterization	Poor ejection fraction $\leq 35\%$	D
Echocardiogram	Poor ejection fraction $\leq 35\%$	D
Ventricular ectopy:		
Medical record review	Documented life threatening arrhythmia	D
Holter	Uncontrolled ventricular rhythm	D
Medical record review	Documented related syncope	D

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Disability test	Test result	Disability classification
Arrhythmia: supraventricular tachycardia: Medical record review	Documented related syncope	D
Post heart transplant: Medical record review	Post heart transplant	D

**BODY PART: CARDIAC
JOB TITLE: SHOP LABORER**

Angina:		
Echocardiogram	Poor ejection fraction $\leq 35\%$	D
Stress test	Peak exercise ≤ 5 METS	D
Medical record review	Unstable as diagnosed by cardiologist	D
Stress test	Documented hypotensive response	D
Stress test: significant ST changes	Definite ischemia ≤ 5 METS	D
Aortic valve disease:		
Cardiac catheterization	Aortic gradient 25–50 mm HG.	
Echocardiogram	Poor ejection fraction $\leq 35\%$	D
Stress test	Peak exercise ≤ 5 METS	D
Coronary artery disease:		
Myocardial infarction	Multiple infarctions	D
Echocardiogram	Confirmed ventricular aneurysm	D
Cardiac catheterization	Aortic gradient 25–50 mm Hg.	
Cardiac catheterization	Poor ejection fraction $\leq 35\%$	D
Stress test	Peak exercise ≤ 5 METS	D
Medical record review	Unstable as diagnosed by a Cardiologist ...	D
Stress test	Documented hypotensive response	D
Stress test	Definite ischemia ≤ 5 METS	D
Isotope, e.g., thallium study	Definite ischemia ≤ 5 METS	D
Cardiomyopathy:		
Cardiac catheterization	Poor ejection fraction $\leq 35\%$	D
Echocardiogram	Poor ejection fraction $\leq 35\%$	D
Stress test	Peak exercise ≤ 5 METS	D
Hypertension:		
Medical record review	Diastolic ≤ 120 and systolic ≤ 160 , 50% of the time and evidence of end organ damage (blood creatinine ≤ 2 ; urinary protein $\leq 1/2$ gm; or EKG evidence of ischemia).	D
Arrhythmia: heart block:		
Holter	Documented asystole length ≤ 1.5 –2 seconds.	D
Medical record review	Documented syncope with proven arrhythmia.	D
Mitral valve disease:		
Cardiac catheterization	Mitral valve gradient ≥ 10 mm Hg	D
Cardiac catheterization	Mitral regurgitation severe	D
Cardiac catheterization	Poor ejection fraction $\leq 35\%$	D
Echocardiogram	Poor ejection fraction $\leq 35\%$	D
Stress test	Peak exercise ≤ 5 METS	D
Pericardial disease:		
Cardiac catheterization	Poor ejection fraction $\leq 35\%$	D
Echocardiogram	Poor ejection fraction $\leq 35\%$	D
Ventricular ectopy:		
Medical record review	Documented life threatening arrhythmia	D
Holter	Uncontrolled ventricular rhythm	D
Medical record review	Documented related syncope	D
Arrhythmia: supraventricular tachycardia: Medical record review	Documented related syncope	D
Post heart transplant: Medical record review	Post heart transplant	D

**BODY PART: CARDIAC
JOB TITLE: SALES REPRESENTATIVE**

Angina:		
Echocardiogram	Poor ejection fraction $\leq 35\%$	D
Stress test	Peak exercise ≤ 5 METS	D
Medical record review	Unstable as diagnosed by cardiologist	D
Stress test	Documented hypotensive response	D
Stress test: significant ST changes	Definite ischemia ≤ 5 METS	D
Aortic valve disease:		
Cardiac catheterization	Aortic gradient 25–50 mm HG	D
Echocardiogram	Poor ejection fraction $\leq 35\%$	D

Disability test	Test result	Disability classification
Stress test	Peak exercise \leq 5 METS	D
Coronary artery disease:		
Myocardial infarction	Multiple infarctions	D
Echocardiogram	Confirmed ventricular aneurysm	D
Cardiac catheterization	Aortic gradient 25-50 mm Hg	D
Cardiac catheterization	Poor ejection fraction \leq 35%	D
Stress test	Peak exercise \leq 5 METS	D
Medical record review	Unstable as diagnosed by a cardiologist ...	D
Stress test	Documented hypotensive response	D
Stress test	Definite ischemia \leq 5 METS	D
Isotope, e.g., thallium study	Definite ischemia \leq 5 METS	D
Cardiomyopathy:		
Cardiac catheterization	Poor ejection fraction \leq 35%	D
Echocardiogram	Poor ejection fraction \leq 35%	D
Stress test	Peak exercise \leq 5 METS	D
Hypertension:		
Medical record review	Diastolic \leq 120 and systolic \leq 160, 50% of the time and evidence of end organ damage (blood creatinine \leq 2; urinary protein \leq 1/2 gm; or EKG evidence of ischemia).	D
Arrhythmia: heart block:		
Holter	Documented asystole length \leq 1.5-2 seconds.	D
Medical record review	Documented syncope with proven arrhythmia.	D
Mitral valve disease:		
Cardiac catheterization	Mitral valve gradient \geq 10 mm Hg	D
Cardiac catheterization	Mitral regurgitation severe	D
Cardiac catheterization	Poor ejection fraction \leq 35%	D
Echocardiogram	Poor ejection fraction \leq 35%	D
Stress test	Peak exercise \leq 5 METS	D
Pericardial disease:		
Cardiac catheterization	Poor ejection fraction \leq 35%	D
Echocardiogram	Poor ejection fraction \leq 35%	D
Ventricular ectopy:		
Medical record review	Documented life threatening arrhythmia	D
Holter	Uncontrolled ventricular rhythm	D
Medical record review	Documented related syncope	D
Arrhythmia: supraventricular tachycardia:		
Medical record review	Documented related syncope	D
Post heart transplant:		
Medical record review	Post heart transplant	D

**BODY PART: CARDIAC
JOB TITLE: GENERAL OFFICE CLERK**

Angina:		
Echocardiogram	Poor ejection fraction \leq 35%	D
Stress test	Peak exercise \leq 5 METS	D
Medical record review	Unstable as diagnosed by cardiologist	D
Stress test	Documented hypotensive response	D
Stress test: significant ST changes	Definite ischemia \leq 5 METS	D
Aortic valve disease:		
Cardiac catheterization	Aortic gradient 25-50 mm HG	D
Echocardiogram	Poor ejection fraction \leq 35%	D
Stress test	Peak exercise \leq 5 METS	D
Coronary artery disease:		
Myocardial infarction	Multiple infarctions	D
Echocardiogram	Confirmed ventricular aneurysm	D
Cardiac catheterization	Aortic gradient 25-50 mm Hg	D
Cardiac catheterization	Poor ejection fraction \leq 35%	D
Stress test	Peak exercise \leq 5 METS	D
Medical record review	Unstable as diagnosed by a Cardiologist ...	D
Stress test	Documented hypotensive response	D
Stress test	Definite ischemia \leq 5 METS	D
Isotope, e.g., thallium study	Definite ischemia \leq 5 METS	D
Cardiomyopathy:		
Cardiac catheterization	Poor ejection fraction \leq 35%	D
Echocardiogram	Poor ejection fraction \leq 35%	D
Stress test	Peak exercise \leq 5 METS	D
Arrhythmia: heart block:		
Holter	Documented asystole length \leq 1.5-2 seconds.	D

Disability test	Test result	Disability classification
Medical record review	Documented syncope with proven arrhythmia.	D
Mitral valve disease:		
Cardiac catheterization	Mitral valve gradient ≥ 10 mm Hg	D
Cardiac catheterization	Mitral regurgitation severe	D
Cardiac catheterization	Poor ejection fraction $\leq 35\%$	D
Echocardiogram	Poor ejection fraction $\leq 35\%$	D
Stress test	Peak exercise ≤ 5 METS	D
Pericardial disease:		
Cardiac catheterization	Poor ejection fraction $\leq 35\%$	D
Echocardiogram	Poor ejection fraction $\leq 35\%$	D
Ventricular ectopy:		
Medical record review	Documented life threatening arrhythmia	D
Holter	Uncontrolled ventricular rhythm	D
Medical record review	Documented related syncope	D
Arrhythmia: supraventricular tachycardia:		
Medical record review	Documented related syncope	D
Post heart transplant:		
Medical record review	Post heart transplant	D

D. Respiratory

Confirmatory test	Minimum result	Requirements
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**BODY PART: RESPIRATORY
CONFIRMATORY TESTS**

Asthma:		
Spirometry	FEV1/FVC ratio diminished	Recommended.
Spirometry	$\leq 15\%$ change with administration of bronchodilator.	Recommended.
Methacholine challenge test	Positive: FEV1 decrease $\leq 20\%$ at (PC ≤ 8 mg/ml).	Recommended
Bronchiectasis:		
Medical record review	Chronic cough and sputum	Recommended.
Chest X-ray	Bronchiectasis demonstrated	Recommended.
Chest CAT scan	Bronchiectasis demonstrated	Recommended.
Chronic bronchitis:		
Medical record review	Frequent cough—2 years duration	Highly recommended.
Chronic obstructive pulmonary disease:		
Spirometry	FEV1/FVC ratio below 65% when stable ...	Highly recommended.
Spirometry	FEV1 below 75% of predicted when stable	Highly recommended.
Cor pulmonale:		
Electrocardiogram	Definite right ventricular hypertrophy	Recommended.
Echocardiogram	Definite right ventricular hypertrophy	Recommended.
Pulmonary fibrosis:		
Lung biopsy	Diffuse fibrosis	Recommended.
Chest CAT scan	More than minimal fibrosis	Recommended.
Lung resection:		
Medical record review	At least one lobe resected	Highly recommended.
Pneumothorax:		
Medical record review	Required hospitalization with chest tube drainage.	Highly recommended.
Restrictive lung disease:		
Chest X-ray	Restrictive lung changes	Recommended.
DLCO	Abnormal	Highly recommended.
Chest CAT scan	Restrictive lung changes	Recommended.
Spirometry	FVC $< 75\%$ predicted	Highly recommended.
Silicosis:		
Medical record review	Occupational exposure for at least 1 year	Highly recommended.
Tuberculosis:		
Chest X-ray	Evidence of changes consistent with tuberculosis infection.	Recommended.
Culture	Positive	Recommended.

Disability test	Test result	Disability classification
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BODY PART: RESPIRATORY

JOB TITLE: TRAINMAN

Asthma:	
Spirometry	Repeated spirometry FEV1 $< 40\%$ over a 12 month period.

Disability test	Test result	Disability classification
Bronchiectasis:		
Resting ABG	PCO2 arterial ≤50 mm Hg if stable	D
Pulmonary exercise test or exercise ABG	PO2 drop ≤5 torr at maximum exercise	D
Pulmonary exercise test	Maximum VO2 <15 ml/kg	D
Electrocardiogram	Definite positive right ventricular hypertrophy.	D
Chronic bronchitis:		
Spirometry	Repeated spirometry FEV1 <40% over a 12 month period.	D
Resting ABG	PCO2 arterial ≤50 mm Hg if stable	D
Pulmonary exercise test or exercise ABG	PO2 drop ≤5 torr at maximum exercise	D
Pulmonary exercise test	Maximum VO2 <15 ml/kg	D
Electrocardiogram	Definite positive right ventricular hypertrophy.	D
Chronic obstructive pulmonary disease (COPD):		
Resting ABG	PCO2 arterial ≤50 mm Hg if stable	D
Pulmonary exercise test or exercise ABG	PO2 drop ≤5 torr at maximum exercise	D
Pulmonary exercise test	Maximum VO2 <15 ml/kg	D
Electrocardiogram	Definite positive right ventricular hypertrophy.	D
Cor pulmonale:		
Electrocardiogram	Definite positive right ventricular hypertrophy.	D
Pulmonary fibrosis:		
Resting ABG	PCO2 arterial ≤50 mm Hg if stable	D
Electrocardiogram	Definite positive right ventricular hypertrophy.	D
DLCO	<45% predicted	D
Pulmonary exercise test or exercise ABG	PO2 drop ≤5 torr at maximum exercise	D
Pulmonary exercise test	Maximum VO2 <15 ml/kg	D
Spirometry	FVC <50% predicted	D
Lung resection:		
Electrocardiogram	Definite positive right ventricular hypertrophy.	D
Restrictive lung disease:		
DLCO	<45% predicted	D
Pulmonary exercise test or exercise ABG	PO2 drop ≤5 torr at maximum exercise	D
Pulmonary exercise test	Maximum VO2 <15 ml/kg	D
Spirometry	FVC <50% predicted	D
Electrocardiogram	Definite positive right ventricular hypertrophy.	D
Silicosis:		
Resting ABG	PCO2 arterial ≤50 mm Hg if stable	D
Electrocardiogram	Definite positive right ventricular hypertrophy.	D

**BODY PART: RESPIRATORY
JOB TITLE: CARMAN**

Asthma:		
Spirometry	Repeated spirometry FEV1 <40% over a 12 month period.	D
Bronchiectasis:		
Resting ABG	PCO2 arterial ≤50 mm Hg if stable	D
Pulmonary exercise test or exercise ABG	PO2 drop ≤5 torr at maximum exercise	D
Pulmonary exercise test	Maximum VO2 <15 ml/kg	D
Electrocardiogram	Definite positive right ventricular hypertrophy.	D
Chronic bronchitis:		
Spirometry	Repeated spirometry FEV1 <40% over a 12 month period.	D
Resting ABG	PCO2 arterial ≤50 mm Hg if stable	D
Pulmonary exercise test or exercise ABG	PO2 drop ≤5 torr at maximum exercise	D
Pulmonary exercise test	Maximum VO2 <15 ml/kg	D
Electrocardiogram	Definite positive right ventricular hypertrophy.	D
Chronic obstructive pulmonary disease (COPD):		
Resting ABG	PCO2 arterial ≤50 mm Hg if stable	D
Pulmonary exercise test or exercise ABG	PO2 drop ≤5 torr at maximum exercise	D
Pulmonary exercise test	Maximum VO2 <15 ml/kg	D
Electrocardiogram	Definite positive right ventricular hypertrophy.	D

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Disability test	Test result	Disability classification
Cor pulmonale: Electrocardiogram	Definite positive right ventricular hypertrophy.	D
Pulmonary fibrosis: Resting ABG	PCO2 arterial ≤ 50 mm Hg if stable	D
Electrocardiogram	Definite positive right ventricular hypertrophy.	D
DLCO	<45% predicted	D
Pulmonary exercise test or exercise ABG	PO2 drop ≤ 5 torr at maximum exercise	D
Pulmonary exercise test	Maximum VO2 <15 ml/kg	D
Spirometry	FVC <50% predicted	D
Lung resection: Electrocardiogram	Definite positive right ventricular hypertrophy.	D
Restrictive lung disease: DLCO	<45% predicted	D
Pulmonary exercise test or exercise ABG	PO2 drop ≤ 5 torr at maximum exercise	D
Pulmonary exercise test	Maximum VO2 <15 ml/kg	D
Spirometry	FVC <50% predicted	D
Electrocardiogram	Definite positive right ventricular hypertrophy.	D
Silicosis: Resting ABG	PCO2 arterial ≤ 50 mm Hg if stable	D
Electrocardiogram	Definite positive right ventricular hypertrophy.	D

**BODY PART: RESPIRATORY
JOB TITLE: SIGNALMAN**

Asthma: Spirometry	Repeated spirometry FEV1 <40% over a 12 month period.	D
Bronchiectasis: Resting ABG	PCO2 arterial ≤ 50 mm Hg if stable	D
Pulmonary exercise test or exercise ABG	PO2 drop ≤ 5 torr at maximum exercise	D
Pulmonary exercise test	Maximum VO2 <15 ml/kg	D
Electrocardiogram	Definite positive right ventricular hypertrophy.	D
Chronic bronchitis: Spirometry	Repeated spirometry FEV1 <40% over a 12 month period.	D
Resting ABG	PCO2 arterial ≤ 50 mm Hg if stable	D
Pulmonary exercise test or exercise ABG	PO2 drop ≤ 5 torr at maximum exercise	D
Pulmonary exercise test	Maximum VO2 <15 ml/kg	D
Electrocardiogram	Definite positive right ventricular hypertrophy.	D
Chronic obstructive pulmonary disease (COPD): Resting ABG	PCO2 arterial ≤ 50 mm Hg if stable	D
Pulmonary exercise test or exercise ABG	PO2 drop ≤ 5 torr at maximum exercise	D
Pulmonary exercise test	Maximum VO2 <15 ml/kg	D
Electrocardiogram	Definite positive right ventricular hypertrophy.	D
Cor pulmonale: Electrocardiogram	Definite positive right ventricular hypertrophy.	D
Pulmonary fibrosis: Resting ABG	PCO2 arterial ≤ 50 mm Hg if stable	D
DLCO	<45% predicted	D
Pulmonary exercise test or exercise ABG	PO2 drop ≤ 5 torr at maximum exercise	D
Pulmonary exercise test	Maximum VO2 <15 ml/kg	D
Spirometry	FVC <50% predicted	D
Electrocardiogram	Definite positive right ventricular hypertrophy.	D
Lung resection: Electrocardiogram	Definite positive right ventricular hypertrophy.	D
Restrictive lung disease: DLCO	<45% predicted	D
Pulmonary exercise test or exercise ABG	PO2 drop ≤ 5 torr at maximum exercise	D
Pulmonary exercise test	Maximum VO2 <15 ml/kg	D
Spirometry	FVC <50% predicted	D
Electrocardiogram	Definite positive right ventricular hypertrophy.	D

Disability test	Test result	Disability classification
Silicosis:		
Resting ABG	PCO2 arterial ≤50 mm Hg if stable	D
Electrocardiogram	Definite positive right ventricular hypertrophy.	D

**BODY PART: RESPIRATORY
JOB TITLE: TRACKMAN**

Asthma:		
Spirometry	Repeated spirometry FEV1 <40% over a 12 month period.	D
Bronchiectasis:		
Resting ABG	PCO2 arterial ≤50 mm Hg if stable	D
Pulmonary exercise test or exercise ABG	PO2 ≤5 torr at maximum exercise	D
Pulmonary exercise test	Maximum VO2 <15 ml/kg	D
Electrocardiogram	Definite positive right ventricular hypertrophy.	D
Chronic bronchitis:		
Spirometry	Repeated spirometry FEV1 <40% over a 12 month period.	D
Resting ABG	PCO2 arterial ≤50 mm Hg if stable	D
Pulmonary exercise test or exercise ABG	PO2 drop ≤5 torr at maximum exercise	D
Pulmonary exercise test	Maximum VO2 <15 ml/kg	D
Electrocardiogram	Definite positive right ventricular hypertrophy.	D
Chronic obstructive pulmonary disease (COPD):		
Resting ABG	PCO2 arterial ≤50 mm Hg if stable	D
Pulmonary exercise test or exercise ABG	PO2 drop ≤5 torr at maximum exercise	D
Pulmonary exercise test	Maximum VO2 <15 ml/kg	D
Electrocardiogram	Definite positive right ventricular hypertrophy.	D
Cor pulmonale:		
Electrocardiogram	Definite positive right ventricular hypertrophy.	D
Pulmonary fibrosis:		
Resting ABG	PCO2 arterial ≤50 mm Hg if stable	D
Electrocardiogram	Definite positive right ventricular hypertrophy.	D
DLCO	<45% predicted	D
Pulmonary exercise test or exercise ABG	PO2 drop ≤5 torr at maximum exercise	D
Pulmonary exercise test	Maximum VO2 <15 ml/kg	D
Spirometry	FVC <50% predicted	D
Lung resection:		
Electrocardiogram	Definite positive right ventricular hypertrophy.	D
Restrictive lung disease:		
DLCO	<45% predicted	D
Pulmonary exercise test or exercise ABG	PO2 drop ≤5 torr at maximum exercise	D
Pulmonary exercise test	Maximum VO2 <15 ml/kg	D
Spirometry	FVC <50% predicted	D
Electrocardiogram	Definite positive right ventricular hypertrophy.	D
Silicosis:		
Resting ABG	PCO2 arterial ≤50 mm Hg if stable	D
Electrocardiogram	Definite positive right ventricular hypertrophy.	D

**BODY PART: RESPIRATORY
JOB TITLE: MACHINIST**

Asthma:		
Spirometry	Repeated spirometry FEV1 <40% over a 12 month period.	D
Bronchiectasis:		
Resting ABG	PCO2 arterial ≤50 mm Hg if stable	D
Pulmonary exercise test or exercise ABG	PO2 drop ≤5 torr at maximum exercise	D
Pulmonary exercise test	Maximum VO2 <15 ml/kg	D
Electrocardiogram	Definite positive right ventricular hypertrophy.	D
Chronic bronchitis:		
Spirometry	Repeated spirometry FEV1 <40% over a 12 month period.	D
Resting ABG	PCO2 arterial ≤50 mm Hg if stable	D

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Disability test	Test result	Disability classification
Pulmonary exercise test or exercise ABG	PO2 drop ≤5 torr at maximum exercise	D
Pulmonary exercise test	Maximum VO2 <15 ml/kg	D
Electrocardiogram	Definite positive right ventricular hypertrophy.	D
Chronic obstructive pulmonary disease (COPD):		
Resting ABG	PCO2 arterial ≤50 mm Hg if stable	D
Pulmonary exercise test or exercise ABG	PO2 drop ≤5 torr at maximum exercise	D
Pulmonary exercise test	Maximum VO2 <15 ml/kg	D
Electrocardiogram	Definite positive right ventricular hypertrophy.	D
Cor pulmonale:		
Electrocardiogram	Definite positive right ventricular hypertrophy.	D
Pulmonary fibrosis:		
Resting ABG	PCO2 arterial ≤50 mm Hg if stable	D
Electrocardiogram	Definite positive right ventricular hypertrophy.	D
DLCO	<45% predicted	D
Pulmonary exercise test or exercise ABG	PO2 drop ≤5 torr at maximum exercise	D
Pulmonary exercise test	Maximum VO2 <15 ml/kg	D
Spirometry	FVC <50% predicted	D
Lung resection:		
Electrocardiogram	Definite positive right ventricular hypertrophy.	D
Restrictive lung disease:		
DLCO	<45% predicted	D
Pulmonary exercise test or exercise ABG	PO2 drop ≤5 torr at maximum exercise	D
Pulmonary exercise test	Maximum VO2 <15 ml/kg	D
Spirometry	FVC <50% predicted	D
Electrocardiogram	Definite positive right ventricular hypertrophy.	D
Silicosis:		
Resting ABG	PCO2 arterial ≤50 mm Hg if stable	D
Electrocardiogram	Definite positive right ventricular hypertrophy.	D

**BODY PART: RESPIRATORY
JOB TITLE: SHOP LABORER**

Asthma:		
Spirometry	Repeated spirometry FEV1 <40% over a 12 month period.	D
Bronchiectasis:		
Resting ABG	PCO2 arterial ≤50 mm Hg if stable	D
Pulmonary exercise test or exercise ABG	PO2 drop ≤5 torr at maximum exercise	D
Pulmonary exercise test	Maximum VO2 <15 ml/kg	D
Electrocardiogram	Definite positive right ventricular hypertrophy.	D
Chronic bronchitis:		
Spirometry	Repeated spirometry FEV1 <40% over a 12 month period.	D
Resting ABG	PCO2 arterial ≤50 mm Hg if stable	D
Pulmonary exercise test or exercise ABG	PO2 drop ≤5 torr at maximum exercise	D
Pulmonary exercise test	Maximum VO2 <15 ml/kg	D
Electrocardiogram	Definite positive right ventricular hypertrophy.	D
Chronic obstructive pulmonary disease (COPD):		
Resting ABG	PCO2 arterial ≤50 mm Hg if stable	D
Pulmonary exercise test or exercise ABG	PO2 drop ≤5 torr at maximum exercise	D
Pulmonary exercise test	Maximum VO2 <15 ml/kg	D
Electrocardiogram	Definite positive right ventricular hypertrophy.	D
Cor pulmonale:		
Electrocardiogram	Definite positive right ventricular hypertrophy.	D
Pulmonary fibrosis:		
Resting ABG	PCO2 arterial ≤50 mm Hg if stable	D
DLCO	<45% predicted	D
Pulmonary exercise test or exercise ABG	PO2 drop ≤5 torr at maximum exercise	D
Pulmonary exercise test	Maximum VO2 <15 ml/kg	D
Spirometry	FVC <50% predicted	D
Electrocardiogram	Definite positive right ventricular hypertrophy.	D

Disability test	Test result	Disability classification
Lung resection: Electrocardiogram	Definite positive right ventricular hypertrophy.	D
Restrictive lung disease: DLCO	<45% predicted	D
Pulmonary exercise test or exercise ABG	PO2 drop ≤5 torr at maximum exercise	D
Pulmonary exercise test	Maximum VO2 <15 ml/kg	D
Spirometry	FVC <50% predicted	D
Electrocardiogram	Definite positive right ventricular hypertrophy.	D
Silicosis: Resting ABG	PCO2 arterial ≤50 mm Hg if stable	D
Electrocardiogram	Definite positive right ventricular hypertrophy.	D

E. Lumbar Sacral Spine

Confirmatory test	Minimum result	Requirements
BODY PART: LS SPINE CONFIRMATORY TESTS		
Ankylosing spondylitis: X-ray-lumbar sacral spine	Sacroiliitis	Highly recommended.
HLA B27 (blood test)	Positive HLA B27 (90% case)	Recommended.
Backache, unspecified: Medical record review	History of back pain under medical treatment for at least 1 year.	Highly recommended.
Medical record review	History of back pain unresponsive to therapy for at least 1 year.	Highly recommended.
Medical record review	History of back pain with functional limitations for at least 1 year.	Highly recommended.
Chronic back pain, not otherwise specified: Medical record review	History of back pain under medical treatment for at least 1 year.	Highly recommended.
Medical record review	History of back pain unresponsive to therapy for at least 1 year.	Highly recommended.
Medical record review	History of back pain with functional limitations for at least 1 year.	Highly recommended.
Cauda equina syndrome with bowel or bladder dysfunction: Magnetic resonance imaging	Neural impingement of spinal nerves below L1.	Recommended.
Computerized tomography	Neural impingement of spinal nerves below L1.	Recommended.
Cystometrogram	Impaired bladder function	Recommended.
Rectal examination	Diminished rectal sphincter tone	Recommended.
Myelogram	Neural impingement of spinal nerves below L1.	Recommended.
Degeneration of lumbar disc: X-ray lumbar sacral spine	Significant degenerative disc changes	Recommended.
Computerized tomography	Significant degenerative disc changes	Recommended.
Magnetic resonance imaging	Significant degenerative disc changes	Recommended.
Myelogram	Significant degenerative disc changes	Recommended.
Displacement of lumbar disc: X-ray-lumbar sacral spine	Significant degenerative disc changes	Recommended.
Computerized tomography	Significant degenerative disc changes	Recommended.
Magnetic resonance imaging	Significant degenerative disc changes	Recommended.
Myelogram	Significant degenerative disc changes	Recommended.
Fracture: vertebral body: Magnetic resonance imaging	Fracture vertebral body	Recommended.
Computerized tomography	Fracture vertebral body	Recommended.
X-ray-lumbar sacral spine	Fracture vertebral body	Recommended.
Fracture: posterior element with spinal canal displacement: Magnetic resonance imaging	Fracture posterior spinal element with displacement of spinal canal.	Recommended.
Computerized tomography	Fracture posterior spinal element with displacement of spinal canal.	Recommended.
X-ray-lumbar sacral spine	Fracture posterior spinal element with displacement of spinal canal.	Recommended.
Fracture: posterior spinal element with no displacement:		

E. Lumbar Sacral Spine—Continued

Confirmatory test	Minimum result	Requirements
X-ray-lumbar sacral spine	Fracture posterior spinal element	Recommended.
Magnetic resonance imaging	Fracture posterior spinal element	Recommended.
Computerized tomography	Fracture posterior spinal element	Recommended.
Fracture: spinous process:		
X-ray-lumbar sacral spine	Spinous process fracture	Recommended.
Magnetic resonance imaging	Spinous process fracture	Recommended.
Computerized tomography	Spinous process fracture	Recommended.
Fracture: Transverse process:		
Lumbar sacral spine	Transverse process fracture	Recommended.
Magnetic resonance imaging	Transverse process fracture	Recommended.
Computerized tomography	Transverse process fracture	Recommended.
Intervertebral disc disorder:		
X-ray-lumbar sacral spine	Significant disc degeneration	Recommended.
Magnetic resonance imaging	Significant disc degeneration	Recommended.
Computerized tomography	Significant disc degeneration	Recommended.
Myelogram	Significant disc degeneration	Recommended.
Lumbago:		
Medical record review: lumbar	History of back pain under medical treatment for at least 1 year.	Highly recommended.
Medical record review: lumbar	History of back pain unresponsive to therapy for at least 1 year.	Highly recommended.
Medical record review: lumbar	History of back pain with functional limitations for at least 1 year.	Highly recommended.
Lumbosacral neuritis:		
Magnetic resonance imaging	Evidence of neural compression	Recommended.
Electromyography	Definite denervation	Recommended.
Nerve conduction velocity	Definite slowing	Recommended.
Physical examination—atrophy	Atrophy in affected limb with 2 cm difference between limbs.	Recommended.
Physical examination: straight leg raise ...	Positive straight leg raise	Recommended.
Sensory examination	Loss of sensation in affected dermatomes	Recommended.
Medical history	History of radicular pain	Highly recommended.
Computerized tomography	Evidence of neural compression	Recommended.
Lumbar spinal stenosis:		
Computerized tomography	Significant narrowing: spinal cord canal or intervertebral foramen.	Recommended.
Magnetic resonance imaging	Significant narrowing: spinal cord canal or intervertebral foramen.	Recommended.
Myelogram	Significant narrowing: spinal cord canal or intervertebral foramen.	Recommended.
Mechanical complication of internal orthopedic device:		
Medical record review	Documentation of failure of implant following surgical procedure.	Highly recommended.
Osteomalacia:		
X-ray-lumbar sacral spine	Evidence of significant osteomalacia	Recommended.
Magnetic resonance imaging	Evidence of significant osteomalacia	Recommended.
Computerized tomography	Evidence of significant osteomalacia	Recommended.
Osteomyelitis, chronic-lumbar:		
X-ray-lumbar sacral spine	Evidence of chronic infection	Recommended.
Magnetic resonance imaging	Evidence of chronic infection	Recommended.
Computerized tomography	Evidence of chronic infection	Recommended.
Osteoporosis:		
Computerized tomography	Significant bone density loss	Recommended.
Dual photon absorptiometry	Significant bone density loss	Recommended.
X-ray-lumbar sacral spine	Significant bone density loss	Recommended.
Post laminectomy syndrome with radiculopathy:		
Medical record review: lumbar	Documented surgical history of laminectomy.	Highly recommended.
Magnetic resonance imaging	Evidence of laminectomy	Recommended.
Electromyography	Definite denervation	Recommended.
Nerve conduction velocity	Definite slowing	Recommended.
Physical examination—atrophy	Atrophy in affected limb with 2 cm difference between limbs.	Recommended.
Physical examination: straight leg raise ...	Positive straight leg raise	Recommended.
Sensory examination	Loss of sensation in affected dermatomes	Recommended.
Medical record review: lumbar	History of radicular pain	Highly recommended.
Computerized tomography	Evidence of laminectomy	Recommended.
Myelogram	Evidence of laminectomy	Recommended.
Radiculopathy:		
Magnetic resonance imaging	Evidence of neural compression	Recommended.

E. Lumbar Sacral Spine—Continued

Confirmatory test	Minimum result	Requirements
Electromyography	Definite denervation	Recommended.
Nerve conduction velocity	Definite slowing	Recommended.
Physical examination—atrophy	Atrophy in affected limb with 2 cm difference between limbs.	Recommended.
Physical examination: straight leg raise ...	Positive straight leg raise	Recommended.
Sensory examination	Loss of sensation in affected dermatomes	Recommended.
Medical record review: lumbar	History of radicular pain	Highly recommended.
Computerized tomography	Evidence of neural compression	Recommended.
Myelogram	Evidence of neural compression	Recommended.
Sciatica:		
Magnetic resonance imaging	Evidence of neural compression	Recommended.
Electromyography	Definite denervation	Recommended.
Nerve conduction velocity	Definite slowing	Recommended.
Physical examination—atrophy	Atrophy in affected limb with 2 cm difference between limbs.	Recommended.
Physical examination: straight leg raise ...	Positive straight leg raise	Recommended.
Sensory examination	Loss of sensation in affected dermatomes	Recommended.
Medical history	History of radicular pain	Highly recommended.
Computerized tomography	Evidence of neural compression	Recommended.
Myelogram	Evidence of neural compression	Recommended.
Strains and sprains, unspecified:		
Medical record review	History of back pain under medical treatment for at least 1 year.	Highly recommended.
Medical record review	History of back pain unresponsive to therapy for at least 1 year.	Highly recommended.
Medical record review	History of back pain with functional limitations for at least 1 year.	Highly recommended.
Medical record review	Documented history of strain and/or sprain	Highly recommended.
Spondylolisthesis grade 1:		
X-ray-lumbar sacral spine	1-25% slippage	Recommended.
Computerized tomography	1-25% slippage	Recommended.
Magnetic resonance imaging	1-25% slippage	Recommended.
Spondylolisthesis grade 2:		
X-ray-lumbar sacral spine	26-50% slippage	Recommended.
Computerized tomography	26-50% slippage	Recommended.
Magnetic resonance imaging	26-50% slippage	Recommended.
Spondylolisthesis grade 3:		
X-ray-lumbar sacral spine	51-75% slippage	Recommended.
Computerized tomography	51-75% slippage	Recommended.
Magnetic resonance imaging	51-75% slippage	Recommended.
Spondylolisthesis grade 4:		
X-ray-lumbar sacral spine	Complete slippage	Recommended.
Computerized tomography	Complete slippage	Recommended.
Magnetic resonance imaging	Complete slippage	Recommended.
Spondylolisthesis-acquired:		
X-ray-lumbar sacral spine	Slippage	Recommended.
Computerized tomography	Slippage	Recommended.
Magnetic resonance imaging	Slippage	Recommended.
Spondylolysis:		
X-ray-lumbar sacral spine	Defect—pars interarticularis	Recommended.
Computerized tomography	Defect—pars interarticularis	Recommended.
Magnetic resonance imaging	Defect—pars interarticularis	Recommended.
Sprains and strains, sacral:		
Medical record review: lumbar	History of back pain under medical treatment for at least 1 year.	Highly recommended.
Medical record review: lumbar	History of back pain unresponsive to therapy for at least 1 year.	Highly recommended.
Medical record review: lumbar	History of back with functional limitations for at least 1 year.	Highly recommended.
Medical record review: lumbar	Documented history of strain and/or sprain	Highly recommended.
Sprains and strains, sacroiliac:		
Medical record review: lumbar	History of back pain under medical treatment for at least 1 year.	Highly recommended.
Medical record review: lumbar	History of back pain unresponsive to therapy for at least 1 year.	Highly recommended.
Medical record review: lumbar	History of back pain with functional limitations for at least 1 year.	Highly recommended.
Medical record review: lumbar	Documented history of strain and/or sprain	Highly recommended.

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Disability test	Test result	Disability classification
BODY PART: LS SPINE JOB TITLE: TRAINMAN		
Ankylosing spondylitis:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Backache, unspecified:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Chronic back pain, not otherwise specified:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Cauda equina syndrome with bowel or bladder dysfunction:		
Computerized tomography	Disc extrusion with neural impingement, nerves < L1.	D
Magnetic resonance imaging	Disc extrusion with neural impingement, nerves < L1.	D
Physical examination	Lower extremity weakness	D
Cystometrogram	Impaired bladder function	D
Myelogram	Disc extrusion with neural impingement, nerves <L1.	D
Physical examination: rectal	Impairment of sphincter tone	D
Muscle strength assessment	Lifting capacity diminished by 50%	D
Degeneration of lumbar disc:		
Computerized tomography	Disc extrusion with neural impingement	D
Magnetic resonance imaging	Disc extrusion with neural impingement	D
Myelogram	Disc extrusion with neural impingement	D
Muscle strength assessment	Lifting capacity diminished by 50%	D
Displacement of lumbar disc:		
Computerized tomography	Disc extrusion with neural impingement	D
Magnetic resonance imaging	Disc extrusion with neural impingement	D
Myelogram	Disc extrusion with neural impingement	D
Muscle strength assessment	Lifting capacity diminished by 50%	D
Fracture: vertebral body:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Fracture: posterior spinal element with displacement:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Fracture: posterior spinal element with no displacement:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Fracture: spinous process:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Fracture transverse process:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Intervertebral disc disorder:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Computerized tomography	Disc extrusion with neural impingement	D
Magnetic resonance imaging	Disc extrusion with neural impingement	D
Myelogram	Disc extrusion with neural impingement	D
Lumbago:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Lumbosacral neuritis:		
Computerized tomography	Disc extrusion with neural impingement	D
Magnetic resonance imaging	Disc extrusion with neural impingement	D
Myelogram	Disc extrusion with neural impingement	D
Muscle strength assessment	Lifting capacity diminished by 50%	D
Physical examination	Lower extremity weakness	D
Lumbar spinal stenosis:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Computerized tomography	Significant narrowing of the spinal canal ...	D
Magnetic resonance imaging	Significant narrowing of the spinal canal ...	D
Myelogram	Significant narrowing of the spinal canal ...	D
Physical examination	Significant lower extremity weakness	D
Mechanical complication of internal orthopedic device:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
X-ray flexion/extension	Segmental instability	D
Osteomalacia:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Osteomyelitis, chronic-lumbar:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Medical record review	Frequent flare-ups with objective findings ..	D
Osteoporosis:		
Muscle strength assessment	Lifting capacity diminished by 50%	D

Disability test	Test result	Disability classification
Post laminectomy syndrome with radiculopathy:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Computerized tomography	Disc extrusion with neural impingement	D
Magnetic resonance imaging	Disc extrusion with neural impingement	D
Myelogram	Disc extrusion with neural impingement	D
Physical examination	Significant lower extremity weakness	D
Post laminectomy syndrome:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Computerized tomography	Disc extrusion with neural impingement	D
Magnetic resonance imaging	Disc extrusion with neural impingement	D
Myelogram	Disc extrusion with neural impingement	D
Physical examination	Significant lower extremity weakness	D
X-ray flexion/extension	Segmental instability	D
Radiculopathy:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Computerized tomography	Disc extrusion with neural impingement	D
Magnetic resonance imaging	Disc extrusion with neural impingement	D
Myelogram	Disc extrusion with neural impingement	D
Physical examination	Significant lower extremity weakness	D
Sciatica:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Computerized tomography	Disc extrusion with neural impingement	D
Magnetic resonance imaging	Disc extrusion with neural impingement	D
Myelogram	Disc extrusion with neural impingement	D
Physical examination	Significant lower extremity weakness	D
Strains and sprains, unspecified:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Spondylolisthesis grade 1:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
X-ray flexion/extension	Segmental instability	D
Spondylolisthesis grade 2:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Spondylolisthesis grade 3:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Spondylolisthesis grade 4:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
X-ray flexion/extension	Segmental instability	D
Spondylolisthesis—acquired:		
X-ray flexion/extension	Segmental instability	D
Spondylolysis:		
X-ray flexion/extension	Segmental instability	D
Sprains and strains, sacral:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Sprains and strains, sacroiliac:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Vertebral body compression fracture:		
Muscle strength assessment	Lifting capacity diminished by 50%	D

**BODY PART: LS SPINE
JOB TITLE: ENGINEER**

Cauda equina syndrome with bowel or bladder dysfunction:		
Computerized tomography	Disc extrusion with neural impingement, nerves <L1.	D
Magnetic resonance imaging	Disc extrusion with neural impingement, nerves <L1.	D
Physical examination	Lower extremity weakness	D
Cystometrogram	Impaired bladder function	D
Myelogram	Disc extrusion with neural impingement, nerves <L1.	D
Physical examination: rectal	Impairment of sphincter tone	D

**BODY PART: LS SPINE
JOB TITLE: CARMAN**

Ankylosing spondylitis:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Backache, unspecified:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Chronic back pain, not otherwise specified:		
Muscle strength assessment	Lifting capacity diminished by 50%	D

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Disability test	Test result	Disability classification
Cauda equina syndrome with bowel or bladder dysfunction:		
Computerized tomography	Disc extrusion with neural impingement, nerves <L1.	D
Magnetic resonance imaging	Disc extrusion with neural impingement, nerves <L1.	D
Physical examination	Lower extremity weakness	D
Cystometrogram	Impaired bladder function	D
Myelogram	Disc extrusion with neural impingement, nerves <L1.	D
Physical examination: rectal	Impairment of sphincter tone	D
Muscle strength assessment	Lifting capacity diminished by 50%	D
Degeneration of lumbar disc:		
Computerized tomography	Disc extrusion with neural impingement	D
Magnetic resonance imaging	Disc extrusion with neural impingement	D
Myelogram	Disc extrusion with neural impingement	D
Muscle strength assessment	Lifting capacity diminished by 50%	D
Displacement of lumbar disc:		
Computerized tomography	Disc extrusion with neural impingement	D
Magnetic resonance imaging	Disc extrusion with neural impingement	D
Myelogram	Disc extrusion with neural impingement	D
Muscle strength assessment	Lifting capacity diminished by 50%	D
Fracture: vertebral body:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Fracture: posterior spinal element with displacement:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Fracture: posterior spinal element with no displacement:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Fracture: spinous process:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Fracture transverse process:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Intervertebral disc disorder:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Computerized tomography	Disc extrusion with neural impingement	D
Magnetic resonance imaging	Disc extrusion with neural impingement	D
Myelogram	Disc extrusion with neural impingement	D
Lumbago:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Lumbosacral neuritis:		
Computerized tomography	Disc extrusion with neural impingement	D
Magnetic resonance imaging	Disc extrusion with neural impingement	D
Myelogram	Disc extrusion with neural impingement	D
Muscle strength assessment	Lifting capacity diminished by 50%	D
Physical examination	Lower extremity weakness	D
Lumbar spinal stenosis:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Computerized tomography	Significant narrowing of the spinal canal ...	D
Magnetic resonance imaging	Significant narrowing of the spinal canal ...	D
Myelogram	Significant narrowing of the spinal canal ...	D
Physical examination	Significant lower extremity weakness	D
Mechanical complication of internal orthopedic device:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
X-ray flexion/extension	Segmental instability	D
Osteomalacia:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Osteomyelitis, chronic-lumbar:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Medical record review	Frequent flare-ups with objective findings ..	D
Osteoporosis:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Post laminectomy syndrome with radiculopathy:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Computerized tomography	Disc extrusion with neural impingement	D
Magnetic resonance imaging	Disc extrusion with neural impingement	D
Myelogram	Disc extrusion with neural impingement	D
Physical examination	Significant lower extremity weakness	D
Post laminectomy syndrome:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Computerized tomography	Disc extrusion with neural impingement	D

Disability test	Test result	Disability classification
Magnetic resonance imaging	Disc extrusion with neural impingement	D
Myelogram	Disc extrusion with neural impingement	D
Physical examination	Significant lower extremity weakness	D
X-ray flexion/extension	Segmental instability	D
Radiculopathy:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Computerized tomography	Disc extrusion with neural impingement	D
Magnetic resonance imaging	Disc extrusion with neural impingement	D
Myelogram	Disc extrusion with neural impingement	D
Physical examination	Significant lower extremity weakness	D
Sciatica:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Computerized tomography	Disc extrusion with neural impingement	D
Magnetic resonance imaging	Disc extrusion with neural impingement	D
Myelogram	Disc extrusion with neural impingement	D
Physical examination	Significant lower extremity weakness	D
Strains and sprains, unspecified:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Spondylolisthesis grade 1:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
X-ray flexion/extension	Segmental instability	D
Spondylolisthesis grade 2:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Spondylolisthesis grade 3:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Spondylolisthesis grade 4:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
X-ray flexion/extension	Segmental instability	D
Spondylolisthesis-acquired:		
X-ray flexion/extension	Segmental instability	D
Spondylolysis:		
X-ray flexion/extension	Segmental instability	D
Sprains and strains, sacral:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Sprains and strains, sacroiliac:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Vertebral body compression fracture:		
Muscle strength assessment	Lifting capacity diminished by 50%	D

**BODY PART: LS SPINE
JOB TITLE: SIGNALMAN**

Ankylosing spondylitis:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Backache, unspecified:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Chronic back pain, not otherwise specified:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Cauda equina syndrome with bowel or bladder dysfunction:		
Computerized tomography	Disc extrusion with neural impingement, nerves <L1.	D
Magnetic resonance imaging	Disc extrusion with neural impingement, nerves <L1.	D
Physical examination	Lower extremity weakness	D
Cystometrogram	Impaired bladder function	D
Myelogram	Disc extrusion with neural impingement, nerves <L1.	D
Physical examination: rectal	Impairment of sphincter tone	D
Muscle strength assessment	Lifting capacity diminished by 50%	D
Degeneration of lumbar disc:		
Computerized tomography	Disc extrusion with neural impingement	D
Magnetic resonance imaging	Disc extrusion with neural impingement	D
Myelogram	Disc extrusion with neural impingement	D
Muscle strength assessment	Lifting capacity diminished by 50%	D
Displacement of lumbar disc:		
Computerized tomography	Disc extrusion with neural impingement	D
Magnetic resonance imaging	Disc extrusion with neural impingement	D
Myelogram	Disc extrusion with neural impingement	D
Muscle strength assessment	Lifting capacity diminished by 50%	D
Fracture: vertebral body:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Fracture: posterior spinal element with displacement:		
Muscle strength assessment	Lifting capacity diminished by 50%	D

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Disability test	Test result	Disability classification
Fracture: posterior spinal element with no displacement:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Fracture: spinous process:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Fracture transverse process:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Intervertebral disc disorder:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Computerized tomography	Disc extrusion with neural impingement	D
Magnetic resonance imaging	Disc extrusion with neural impingement	D
Myelogram	Disc extrusion with neural impingement	D
Lumbago:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Lumbosacral neuritis:		
Computerized tomography	Disc extrusion with neural impingement	D
Magnetic resonance imaging	Disc extrusion with neural impingement	D
Myelogram	Disc extrusion with neural impingement	D
Muscle strength assessment	Lifting capacity diminished by 50%	D
Physical examination	Lower extremity weakness	D
Lumbar spinal stenosis:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Computerized tomography	Significant narrowing of the spinal canal ...	D
Magnetic resonance imaging	Significant narrowing of the spinal canal ...	D
Myelogram	Significant narrowing of the spinal canal ...	D
Physical examination	Significant lower extremity weakness	D
Mechanical complication of internal orthopedic device:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
X-ray flexion/extension	Segmental instability	D
Osteomalacia:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Osteomyelitis, chronic-lumbar:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Medical record review	Frequent flare-ups with objective findings ..	D
Osteoporosis:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Post laminectomy syndrome with radiculopathy:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Computerized tomography	Disc extrusion with neural impingement	D
Magnetic resonance imaging	Disc extrusion with neural impingement	D
Myelogram	Disc extrusion with neural impingement	D
Physical examination	Significant lower extremity weakness	D
Post laminectomy syndrome:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Computerized tomography	Disc extrusion with neural impingement	D
Magnetic resonance imaging	Disc extrusion with neural impingement	D
Myelogram	Disc extrusion with neural impingement	D
Physical examination	Significant lower extremity weakness	D
X-ray flexion/extension	Segmental instability	D
Radiculopathy:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Computerized tomography	Disc extrusion with neural impingement	D
Magnetic resonance imaging	Disc extrusion with neural impingement	D
Myelogram	Disc extrusion with neural impingement	D
Physical examination	Significant lower extremity weakness	D
Sciatica:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Computerized tomography	Disc extrusion with neural impingement	D
Magnetic resonance imaging	Disc extrusion with neural impingement	D
Myelogram	Disc extrusion with neural impingement	D
Physical examination	Significant lower extremity weakness	D
Strains and sprains, unspecified:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Spondylolisthesis grade 1:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
X-ray flexion/extension	Segmental instability	D
Spondylolisthesis grade 2:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Spondylolisthesis grade 3:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Spondylolisthesis grade 4:		
Muscle strength assessment	Lifting capacity diminished by 50%	D

Disability test	Test result	Disability classification
X-ray flexion/extension	Segmental instability	D
Spondylolisthesis-acquired: X-ray flexion/extension	Segmental instability	D
Spondylolysis: X-ray flexion/extension	Segmental instability	D
Sprains and strains, sacral: Muscle strength assessment	Lifting capacity diminished by 50%	D
Sprains and strains, sacroiliac: Muscle strength assessment	Lifting capacity diminished by 50%	D
Vertebral body compression fracture: Muscle strength assessment	Lifting capacity diminished by 50%	D

**BODY PART: LS SPINE
JOB TITLE: TRACKMAN**

Ankylosing spondylitis: Muscle strength assessment	Lifting capacity diminished by 50%	D
Backache, unspecified: Muscle strength assessment	Lifting capacity diminished by 50%	D
Chronic back pain, not otherwise specified: Muscle strength assessment	Lifting capacity diminished by 50%	D
Cauda equina syndrome with bowel or bladder dysfunction: Computerized tomography	Disc extrusion with neural impingement, nerves <L1.	D
Magnetic resonance imaging	Disc extrusion with neural impingement, nerves <L1.	D
Physical examination	Lower extremity weakness	D
Cystometrogram	Impaired bladder function	D
Myelogram	Disc extrusion with neural impingement, nerves <L1.	D
Physical examination: rectal	Impairment of sphincter tone	D
Muscle strength assessment	Lifting capacity diminished by 50%	D
Degeneration of lumbar disc: Computerized tomography	Disc extrusion with neural impingement	D
Magnetic resonance imaging	Disc extrusion with neural impingement	D
Myelogram	Disc extrusion with neural impingement	D
Muscle strength assessment	Lifting capacity diminished by 50%	D
Displacement of lumbar disc: Computerized tomography	Disc extrusion with neural impingement	D
Magnetic resonance imaging	Disc extrusion with neural impingement	D
Myelogram	Disc extrusion with neural impingement	D
Muscle strength assessment	Lifting capacity diminished by 50%	D
Fracture: vertebral body: Muscle strength assessment	Lifting capacity diminished by 50%	D
Fracture: posterior spinal element with displacement: Muscle strength assessment	Lifting capacity diminished by 50%	D
Fracture: posterior spinal element with no displacement: Muscle strength assessment	Lifting capacity diminished by 50%	D
Fracture: spinous process: Muscle strength assessment	Lifting capacity diminished by 50%	D
Fracture transverse process: Muscle strength assessment	Lifting capacity diminished by 50%	D
Intervertebral disc disorder: Muscle strength assessment	Lifting capacity diminished by 50%	D
Computerized tomography	Disc extrusion with neural impingement	D
Magnetic resonance imaging	Disc extrusion with neural impingement	D
Myelogram	Disc extrusion with neural impingement	D
Lumbago: Muscle strength assessment	Lifting capacity diminished by 50%	D
Lumbosacral neuritis: Computerized tomography	Disc extrusion with neural impingement	D
Magnetic resonance imaging	Disc extrusion with neural impingement	D
Myelogram	Disc extrusion with neural impingement	D
Muscle strength assessment	Lifting capacity diminished by 50%	D
Physical examination	Lower extremity weakness	D
Lumbar spinal stenosis: Muscle strength assessment	Lifting capacity diminished by 50%	D
Computerized tomography	Significant narrowing of the spinal canal ...	D
Magnetic resonance imaging	Significant narrowing of the spinal canal ...	D
Myelogram	Significant narrowing of the spinal canal ...	D
Physical examination	Significant lower extremity weakness	D

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Disability test	Test result	Disability classification
Mechanical complication of internal orthopedic device:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
X-ray flexion/extension	Segmental instability	D
Osteomalacia:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Osteomyelitis, chronic-lumbar:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Medical record review	Frequent flare-ups with objective findings ..	D
Osteoporosis:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Post laminectomy syndrome with radiculopathy:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Computerized tomography	Disc extrusion with neural impingement	D
Magnetic resonance imaging	Disc extrusion with neural impingement	D
Myelogram	Disc extrusion with neural impingement	D
Physical examination	Significant lower extremity weakness	D
Post laminectomy syndrome:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Computerized tomography	Disc extrusion with neural impingement	D
Magnetic resonance imaging	Disc extrusion with neural impingement	D
Myelogram	Disc extrusion with neural impingement	D
Physical examination	Significant lower extremity weakness	D
X-ray flexion/extension	Segmental instability	D
Radiculopathy:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Computerized tomography	Disc extrusion with neural impingement	D
Magnetic resonance imaging	Disc extrusion with neural impingement	D
Myelogram	Disc extrusion with neural impingement	D
Physical examination	Significant lower extremity weakness	D
Sciatica:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Computerized tomography	Disc extrusion with neural impingement	D
Magnetic resonance imaging	Disc extrusion with neural impingement	D
Myelogram	Disc extrusion with neural impingement	D
Physical examination	Significant lower extremity weakness	D
Strains and sprains, unspecified:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Spondylolisthesis grade 1:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
X-ray flexion/extension	Segmental instability	D
Spondylolisthesis grade 2:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Spondylolisthesis grade 3:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Spondylolisthesis grade 4:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
X-ray flexion/extension	Segmental instability	D
Spondylolisthesis-acquired:		
X-ray flexion/extension	Segmental instability	D
Spondylolysis:		
X-ray flexion/extension	Segmental instability	D
Sprains and strains, sacral:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Sprains and strains, sacroiliac:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Vetebral body compression fracture:		
Muscle strength assessment	Lifting capacity diminished by 50%	D

**BODY PART: LS SPINE
JOB TITLE: MACHINIST**

Ankylosing spondylitis:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Backache, unspecified:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Chronic back pain, not otherwise specified:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Cauda equina syndrome with bowel or bladder dysfunction:		
Computerized tomography	Disc extrusion with neural impingement, nerves <L1.	D
Magnetic resonance imaging	Disc extrusion with neural impingement, nerves <L1.	D

Disability test	Test result	Disability classification
Physical examination	Lower extremity weakness	D
Cystometrogram	Impaired bladder function	D
Myelogram	Disc extrusion with neural impingement, nerves <L1.	D
Physical examination: rectal	Impairment of sphincter tone	D
Muscle strength assessment	Lifting capacity diminished by 50%	D
Degeneration of lumbar disc:		
Computerized tomography	Disc extrusion with neural impingement	D
Magnetic resonance imaging	Disc extrusion with neural impingement	D
Myelogram	Disc extrusion with neural impingement	D
Muscle strength assessment	Lifting capacity diminished by 50%	D
Displacement of lumbar disc:		
Computerized tomography	Disc extrusion with neural impingement	D
Magnetic resonance imaging	Disc extrusion with neural impingement	D
Myelogram	Disc extrusion with neural impingement	D
Muscle strength assessment	Lifting capacity diminished by 50%	D
Fracture: vertebral body:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Fracture: posterior spinal element with displacement:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Fracture: posterior spinal element with no displacement:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Fracture: spinous process:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Fracture transverse process:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Intervertebral disc disorder:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Computerized tomography	Disc extrusion with neural impingement	D
Magnetic resonance imaging	Disc extrusion with neural impingement	D
Myelogram	Disc extrusion with neural impingement	D
Lumbago:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Lumbosacral neuritis:		
Computerized tomography	Disc extrusion with neural impingement	D
Magnetic resonance imaging	Disc extrusion with neural impingement	D
Myelogram	Disc extrusion with neural impingement	D
Muscle strength assessment	Lifting capacity diminished by 50%	D
Physical examination	Lower extremity weakness	D
Lumbar spinal stenosis:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Computerized tomography	Significant narrowing of the spinal canal ...	D
Magnetic resonance imaging	Significant narrowing of the spinal canal ...	D
Myelogram	Significant narrowing of the spinal canal ...	D
Physical examination	Significant lower extremity weakness	D
Mechanical complication of internal orthopedic device:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
X-ray flexion/extension	Segmental instability	D
Osteomalacia:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Osteomyelitis, chronic-lumbar:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Medical record review	Frequent flare-ups with objective findings ..	D
Osteoporosis:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Post laminectomy syndrome with radiculopathy:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Computerized tomography	Disc extrusion with neural impingement	D
Magnetic resonance imaging	Disc extrusion with neural impingement	D
Myelogram	Disc extrusion with neural impingement	D
Physical examination	Significant lower extremity weakness	D
Post laminectomy syndrome:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Computerized tomography	Disc extrusion with neural impingement	D
Magnetic resonance imaging	Disc extrusion with neural impingement	D
Myelogram	Disc extrusion with neural impingement	D
Physical examination	Significant lower extremity weakness	D
X-ray flexion/extension	Segmental instability	D
Radiculopathy:		
Muscle strength assessment	Lifting capacity diminished by 50%	D

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Disability test	Test result	Disability classification
Computerized tomography	Disc extrusion with neural impingement	D
Magnetic resonance imaging	Disc extrusion with neural impingement	D
Myelogram	Disc extrusion with neural impingement	D
Physical examination	Significant lower extremity weakness	D
Sciatica:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Computerized tomography	Disc extrusion with neural impingement	D
Magnetic resonance imaging	Disc extrusion with neural impingement	D
Myelogram	Disc extrusion with neural impingement	D
Physical examination	Significant lower extremity weakness	D
Strains and sprains, unspecified:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Spondylolisthesis grade 1:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
X-ray flexion/extension	Segmental instability	D
Spondylolisthesis grade 2:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Spondylolisthesis grade 3:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Spondylolisthesis grade 4:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
X-ray flexion/extension	Segmental instability	D
Spondylolisthesis-acquired:		
X-ray flexion/extension	Segmental instability	D
Spondylolysis:		
X-ray flexion/extension	Segmental instability	D
Sprains and strains, sacral:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Sprains and strains, sacroiliac:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Vertebral body compression fracture:		
Muscle strength assessment	Lifting capacity diminished by 50%	D

**BODY PART: LS SPINE
JOB TITLE: SHOP LABORER**

Ankylosing spondylitis:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Backache, unspecified:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Chronic back pain, not otherwise specified:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Cauda equina syndrome with bowel or bladder dysfunction:		
Computerized tomography	Disc extrusion with neural impingement, nerves <L1.	D
Magnetic resonance imaging	Disc extrusion with neural impingement, nerves <L1.	D
Physical examination	Lower extremity weakness	D
Cystometrogram	Impaired bladder function	D
Myelogram	Disc extrusion with neural impingement, nerves <L1.	D
Physical examination: rectal	Impairment of sphincter tone	D
Muscle strength assessment	Lifting capacity diminished by 50%	D
Degeneration of lumbar disc:		
Computerized tomography	Disc extrusion with neural impingement	D
Magnetic resonance imaging	Disc extrusion with neural impingement	D
Myelogram	Disc extrusion with neural impingement	D
Muscle strength assessment	Lifting capacity diminished by 50%	D
Displacement of lumbar disc:		
Computerized tomography	Disc extrusion with neural impingement	D
Magnetic resonance imaging	Disc extrusion with neural impingement	D
Myelogram	Disc extrusion with neural impingement	D
Muscle strength assessment	Lifting capacity diminished by 50%	D
Fracture: vertebral body:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Fracture: posterior spinal element with displacement:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Fracture: posterior spinal element with no displacement:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Fracture: spinous process:		
Muscle strength assessment	Lifting capacity diminished by 50%	D

Disability test	Test result	Disability classification
Fracture transverse process:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Intervertebral disc disorder:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Computerized tomography	Disc extrusion with neural impingement	D
Magnetic resonance imaging	Disc extrusion with neural impingement	D
Myelogram	Disc extrusion with neural impingement	D
Lumbago:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Lumbosacral neuritis:		
Computerized tomography	Disc extrusion with neural impingement	D
Magnetic resonance imaging	Disc extrusion with neural impingement	D
Myelogram	Disc extrusion with neural impingement	D
Muscle strength assessment	Lifting capacity diminished by 50%	D
Physical examination	Lower extremity weakness	D
Lumbar spinal stenosis:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Computerized tomography	Significant narrowing of the spinal canal ...	D
Magnetic resonance imaging	Significant narrowing of the spinal canal ...	D
Myelogram	Significant narrowing of the spinal canal ...	D
Physical examination	Significant lower extremity weakness	D
Mechanical complication of internal ortho- pedic device:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
X-ray flexion/extension	Segmental instability	D
Osteomalacia:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Osteomyelitis, chronic-lumbar:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Medical record review	Frequent flare-ups with objective findings ..	D
Osteoporosis:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Post laminectomy syndrome with radiculopathy:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Computerized tomography	Disc extrusion with neural impingement	D
Magnetic resonance imaging	Disc extrusion with neural impingement	D
Myelogram	Disc extrusion with neural impingement	D
Physical examination	Significant lower extremity weakness	D
Post laminectomy syndrome:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Computerized tomography	Disc extrusion with neural impingement	D
Magnetic resonance imaging	Disc extrusion with neural impingement	D
Myelogram	Disc extrusion with neural impingement	D
Physical examination	Significant lower extremity weakness	D
X-ray flexion/extension	Segmental instability	D
Radiculopathy:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Computerized tomography	Disc extrusion with neural impingement	D
Magnetic resonance imaging	Disc extrusion with neural impingement	D
Myelogram	Disc extrusion with neural impingement	D
Physical examination	Significant lower extremity weakness	D
Sciatica:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Computerized tomography	Disc extrusion with neural impingement	D
Magnetic resonance imaging	Disc extrusion with neural impingement	D
Myelogram	Disc extrusion with neural impingement	D
Physical examination	Significant lower extremity weakness	D
Strains and sprains, unspecified:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Spondylolisthesis grade 1:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
X-ray flexion/extension	Segmental instability	D
Spondylolisthesis grade 2:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Spondylolisthesis grade 3:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
Spondylolisthesis grade 4:		
Muscle strength assessment	Lifting capacity diminished by 50%	D
X-ray flexion/extension	Segmental instability	D
Spondylolisthesis-acquired:		
X-ray flexion/extension	Segmental instability	D
Spondylolysis:		
X-ray flexion/extension	Segmental instability	D

Disability test	Test result	Disability classification
Sprains and strains, sacral: Muscle strength assessment	Lifting capacity diminished by 50%	D
Sprains and strains, sacroiliac: Muscle strength assessment	Lifting capacity diminished by 50%	D
Vertebral body compression fracture: Muscle strength assessment	Lifting capacity diminished by 50%	D

F. Cervical Spine

Confirmatory test	Minimum result	Requirements
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**BODY PART: CE SPINE
CONFIRMATORY TESTS**

Cervical disc disease with myelopathy: Physical examination: cervical	Evidence of myelopathy	Highly recommended.
Myelogram	Evidence of neurogenic compression	Recommended.
Computerized axial tomography	Evidence of neurogenic compression	Recommended.
Magnetic resonance imaging	Evidence of neurogenic compression	Recommended.
Chronic herniated disc: X-ray: cervical spine	Evidence of significant disc degeneration ..	Recommended.
Myelogram	Evidence of significant disc degeneration ..	Recommended.
Computerized axial tomography	Evidence of significant disc degeneration ..	Recommended.
Magnetic resonance imaging	Evidence of significant disc degeneration ..	Recommended.
Cervical spondylolysis: X-ray: cervical spine	Evidence of significant disc degeneration ..	Recommended.
Computerized axial tomography	Evidence of significant disc degeneration ..	Recommended.
Magnetic resonance imaging	Evidence of significant disc degeneration ..	Recommended.
Cervical intervertebral disc degeneration: X-ray: cervical spine	Evidence of significant disc degeneration ..	Recommended.
Myelogram	Evidence of significant disc degeneration ..	Recommended.
Magnetic resonance imaging	Evidence of significant disc degeneration ..	Recommended.
Fracture: posterior element with spinal canal displacement: X-ray: cervical spine	Fractured posterior element with canal displacement.	Recommended.
Computerized axial tomography	Fractured posterior element with canal displacement.	Recommended.
Magnetic resonance imaging	Fractured posterior element with canal displacement.	Recommended.
Fracture: transverse, spinous or posterior process: X-ray: cervical spine	Fracture of relevant part	Recommended.
Computerized axial tomography	Fracture of relevant part	Recommended.
Magnetic resonance imaging	Fracture of relevant part	Recommended.
Osteoarthritis, cervical: X-ray: cervical spine	Evidence of extensive disc degeneration ...	Recommended.
Computerized axial tomography	Evidence of extensive disc degeneration ...	Recommended.
Magnetic resonance imaging	Evidence of extensive disc degeneration ...	Recommended.
Post laminectomy syndrome: Medical records: cervical	Confirmed surgical history	Highly recommended.
Medical records: cervical	Continued pain post-surgery	Highly recommended.
Radiculopathy: Medical records: cervical	History of radicular pain	Highly recommended.
Physical examination: arm	Loss of reflexes in affected dermatomes ...	Recommended.
Physical examination: arm	Evidence of atrophy ≤ 2 cm	Recommended.
Electromyography	Definite denervation in muscle of affected nerve root.	Recommended.
Myelogram	Evidence of neurogenic compression	Recommended.
Magnetic resonance imaging	Compression of spinal nerves	Recommended.
Computerized axial tomography	Compression of spinal nerves	Recommended.
Rheumatoid arthritis, cervical: Rheumatoid factor (blood test)	Titer of rheumatoid factor	Recommended.
X-ray: cervical spine	Rheumatoid changes of spine	Highly recommended.
Medical records review: cervical	Confirmation by rheumatologist or internist	Highly recommended.
Spondylogenic compression of spinal cord: Physical examination: cervical	Evidence of myelopathy	Highly recommended.
Computerized axial tomography	Evidence of neurogenic compression	Recommended.
Magnetic resonance imaging	Evidence of neurogenic compression	Recommended.
Myelogram	Evidence of neurogenic compression	Recommended.

Disability test	Test result	Disability classification
BODY PART: CE SPINE JOB TITLE: TRAINMAN		
Cervical disc disease with myelopathy:		
Computerized axial tomography	Significant spinal cord pressure	D
Magnetic resonance imaging	Significant spinal cord pressure	D
Myelogram	Significant spinal cord pressure	D
Cystometrogram	Impaired bladder function	D
Physical examination: rectal	Impairment of sphincter tone	D
Physical examination: lower limb	Lower extremity weakness or significant spasticity.	D
Physical examination	Multi-level neurologic compromise	D
Chronic herniated disc:		
Physical examination	Multi-level neurologic compromise	D
Cervical spondylolysis:		
Physical examination	Multi-level neurologic compromise	D
Cervical intervertebral disc degeneration:		
Physical examination	Multi-level neurologic compromise	D
Fracture: posterior element with spinal canal displacement:		
Physical examination	Multi-level neurologic compromise	D
Post laminectomy syndrome:		
Physical examination	Multi-level neurologic compromise	D
Cervical radiculopathy:		
Physical examination	Multi-level neurologic compromise	D
Spondylogenic compression of spinal cord:		
Computerized axial tomography	Significant spinal cord pressure	D
Magnetic resonance imaging	Significant spinal cord pressure	D
Cystometrogram	Impaired bladder function	D
Myelogram	Significant spinal cord pressure	D
Physical examination: rectal	Impairment of sphincter tone	D
Physical examination	Multi-level neurologic compromise	D
Physical examination: lower limb	Lower extremity weakness or significant spasticity.	D
BODY PART: CE SPINE JOB TITLE: ENGINEER		
Cervical disc disease with myelopathy:		
Computerized axial tomography	Significant spinal cord pressure	D
Magnetic resonance imaging	Significant spinal cord pressure	D
Myelogram	Significant spinal cord pressure	D
Cystometrogram	Impaired bladder function	D
Physical examination: rectal	Impairment of sphincter tone	D
Physical examination: lower limb	Lower extremity weakness or significant spasticity.	D
Physical examination	Multi-level neurologic compromise	D
Chronic herniated disc:		
Physical examination	Multi-level neurologic compromise	D
Cervical spondylolysis:		
Physical examination	Multi-level neurologic compromise	D
Cervical intervertebral disc degeneration:		
Physical examination	Multi-level neurologic compromise	D
Fracture: posterior element with spinal canal displacement:		
Physical examination	Multi-level neurologic compromise	D
Post laminectomy syndrome:		
Physical examination	Multi-level neurologic compromise	D
Cervical radiculopathy:		
Physical examination:	Multi-level neurologic compromise	D
Spondylogenic compression of spinal cord:		
Computerized axial tomography	Significant spinal cord pressure	D
Magnetic resonance imaging	Significant spinal cord pressure	D
Cystometrogram	Impaired bladder function	D
Myelogram	Significant spinal cord pressure	D
Physical examination: rectal	Impairment of sphincter tone	D
Physical examination	Multi-level neurologic compromise	D
Physical examination: lower limb	Lower extremity weakness or significant spasticity.	D
BODY PART: CE SPINE JOB TITLE: DISPATCHER		
Cervical disc disease with myelopathy:		
Cystometrogram	Impaired bladder function	D

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Disability test	Test result	Disability classification
Physical examination: rectal	Impairment of sphincter tone	D
Spondylogenic compression of spinal cord:		
Cystometrogram	Impaired bladder function	D
Physical examination: rectal	Impairment of sphincter tone	D
BODY PART: CE SPINE JOB TITLE: CARMAN		
Cervical disc disease with myelopathy:		
Computerized axial tomography	Significant spinal cord pressure	D
Magnetic resonance imaging	Significant spinal cord pressure	D
Myelogram	Significant spinal cord pressure	D
Cystometrogram	Impaired bladder function	D
Physical examination: rectal	Impairment of sphincter tone	D
Physical examination: lower limb	Lower extremity weakness or significant spasticity.	D
Physical examination	Multi-level neurologic compromise	D
Chronic herniated disc:		
Physical examination	Multi-level neurologic compromise	D
Cervical spondylolysis:		
Physical examination	Multi-level neurologic compromise	D
Cervical intervertebral disc degeneration:		
Physical examination	Multi-level neurologic compromise	D
Fracture: posterior element with spinal canal displacement:		
Physical examination	Multi-level neurologic compromise	D
Post laminectomy syndrome:		
Physical examination	Multi-level neurologic compromise	D
Cervical radiculopathy:		
Physical examination	Multi-level neurologic compromise	D
Spondylogenic compression of spinal cord:		
Computerized axial tomography	Significant spinal cord pressure	D
Magnetic resonance imaging	Significant spinal cord pressure	D
Cystometrogram	Impaired bladder function	D
Myelogram	Significant spinal cord pressure	D
Physical examination: rectal	Impairment of sphincter tone	D
Physical examination	Multi-level neurologic compromise	D
Physical examination: lower limb	Lower extremity weakness or significant spasticity.	D
BODY PART: CE SPINE JOB TITLE: SIGNALMAN		
Cervical disc disease with myelopathy:		
Computerized axial tomography	Significant spinal cord pressure	D
Magnetic resonance imaging	Significant spinal cord pressure	D
Myelogram	Significant spinal cord pressure	D
Cystometrogram	Impaired bladder function	D
Physical examination: rectal	Impairment of sphincter tone	D
Physical examination: lower limb	Lower extremity weakness or significant spasticity.	D
Physical examination	Multi-level neurologic compromise	D
Chronic herniated disc:		
Physical examination	Multi-level neurologic compromise	D
Cervical spondylolysis:		
Physical examination	Multi-level neurologic compromise	D
Cervical intervertebral disc degeneration:		
Physical examination	Multi-level neurologic compromise	D
Fracture: posterior element with spinal canal displacement:		
Physical examination	Multi-level neurologic compromise	D
Post laminectomy syndrome:		
Physical examination	Multi-level neurologic compromise	D
Cervical radiculopathy:		
Physical examination	Multi-level neurologic compromise	D
Spondylogenic compression of spinal cord:		
Computerized axial tomography	Significant spinal cord pressure	D
Magnetic resonance imaging	Significant spinal cord pressure	D
Cystometrogram	Impaired bladder function	D
Myelogram	Significant spinal cord pressure	D
Physical examination: rectal	Impairment of sphincter tone	D
Physical examination	Multi-level neurologic compromise	D
Physical examination: lower limb	Lower extremity weakness or significant spasticity.	D

Disability test	Test result	Disability classification
BODY PART: CE SPINE JOB TITLE: TRACKMAN		
Cervical disc disease with myelopathy:		
Computerized axial tomography	Significant spinal cord pressure	D
Magnetic resonance imaging	Significant spinal cord pressure	D
Myelogram	Significant spinal cord pressure	D
Cystometrogram	Impaired bladder function	D
Physical examination: rectal	Impairment of sphincter tone	D
Physical examination: lower limb	Lower extremity weakness or significant spasticity.	D
Physical examination	Multi-level neurologic compromise	D
Chronic herniated disc:		
Physical examination	Multi-level neurologic compromise	D
Cervical spondylosis:		
Physical examination	Multi-level neurologic compromise	D
Cervical intervertebral disc degeneration:		
Physical examination	Multi-level neurologic compromise	D
Fracture: posterior element with spinal canal displacement:		
Physical examination	Multi-level neurologic compromise	D
Post laminectomy syndrome:		
Physical examination	Multi-level neurologic compromise	D
Cervical radiculopathy:		
Physical examination	Multi-level neurologic compromise	D
Spondylogenic compression of spinal cord:		
Computerized axial tomography	Significant spinal cord pressure	D
Magnetic resonance imaging	Significant spinal cord pressure	D
Cystometrogram	Impaired bladder function	D
Myelogram	Significant spinal cord pressure	D
Physical examination: rectal	Impairment of sphincter tone	D
Physical examination	Multi-level neurologic compromise	D
Physical examination: lower limb	Lower extremity weakness or significant spasticity.	D
BODY PART: CE SPINE JOB TITLE: MACHINIST		
Cervical disc disease with myelopathy:		
Computerized axial tomography	Significant spinal cord pressure	D
Magnetic resonance imaging	Significant spinal cord pressure	D
Myelogram	Significant spinal cord pressure	D
Cystometrogram	Impaired bladder function	D
Physical examination: rectal	Impairment of sphincter tone	D
Physical examination: lower limb	Lower extremity weakness or significant spasticity.	D
Physical examination	Multi-level neurologic compromise	D
Chronic herniated disc:		
Physical examination	Multi-level neurologic compromise	D
Cervical spondylosis:		
Physical examination	Multi-level neurologic compromise	D
Cervical intervertebral disc degeneration:		
Physical examination	Multi-level neurologic compromise	D
Fracture: posterior element with spinal canal displacement:		
Physical examination	Multi-level neurologic compromise	D
Post laminectomy syndrome:		
Physical examination	Multi-level neurologic compromise	D
Cervical radiculopathy:		
Physical examination	Multi-level neurologic compromise	D
Spondylogenic compression of spinal cord:		
Computerized axial tomography	Significant spinal cord pressure	D
Magnetic resonance imaging	Significant spinal cord pressure	D
Cystometrogram	Impaired bladder function	D
Myelogram	Significant spinal cord pressure	D
Physical examination: rectal	Impairment of sphincter tone	D
Physical examination	Multi-level neurologic compromise	D
Physical examination: lower limb	Lower extremity weakness or significant spasticity.	D
BODY PART: CE SPINE JOB TITLE: SHOP LABORER		
Cervical disc disease with myelopathy:		
Computerized axial tomography	Significant spinal cord pressure	D

Disability test	Test result	Disability classification
Magnetic resonance imaging	Significant spinal cord pressure	D
Myelogram	Significant spinal cord pressure	D
Cystometrogram	Impaired bladder function	D
Physical examination: rectal	Impairment of sphincter tone	D
Physical examination: lower limb	Lower extremity weakness or significant spasticity.	D
Physical examination	Multi-level neurologic compromise	D
Chronic herniated disc:		
Physical examination	Multi-level neurologic compromise	D
Cervical spondylolysis:		
Physical examination	Multi-level neurologic compromise	D
Cervical intervertebral disc degeneration:		
Physical examination	Multi-level neurologic compromise	D
Fracture: posterior element with spinal canal displacement:		
Physical examination	Multi-level neurologic compromise	D
Post laminectomy syndrome:		
Physical examination	Multi-level neurologic compromise	D
Cervical radiculopathy:		
Physical examination	Multi-level neurologic compromise	D
Spondylogenic compression of spinal cord:		
Computerized axial tomography	Significant spinal cord pressure	D
Magnetic resonance imaging	Significant spinal cord pressure	D
Cystometrogram	Impaired bladder function	D
Myelogram	Significant spinal cord pressure	D
Physical examination: rectal	Impairment of sphincter tone	D
Physical examination	Multi-level neurologic compromise	D
Physical examination: lower limb	Lower extremity weakness or significant spasticity.	D

**BODY PART: CE SPINE
JOB TITLE: SALES REPRESENTATIVE**

Cervical disc disease with myelopathy:		
Cystometrogram	Impaired bladder function	D
Physical examination: rectal	Impairment of sphincter tone	D
Spondylogenic compression of spinal cord:		
Cystometrogram	Impaired bladder function	D
Physical examination: rectal	Impairment of sphincter tone	D

**BODY PART: CE SPINE
JOB TITLE: GENERAL OFFICE CLERK**

Cervical disc disease with myelopathy:		
Cystometrogram	Impaired bladder function	D
Physical examination: rectal	Impairment of sphincter tone	D
Spondylogenic compression of spinal cord:		
Cystometrogram	Impaired bladder function	D
Physical examination: rectal	Impairment of sphincter tone	D

G. Shoulder and Elbow

Confirmatory test	Minimum result	Requirements.
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**BODY PART: SHOULDER AND ELBOW
CONFIRMATORY TESTS**

Arthritis, acromioclavicular:		
X-ray: shoulder	Significant degenerative changes of joint ...	Recommended.
Computerized tomography	Significant degenerative changes of joint ...	Recommended.
Magnetic resonance imaging	Significant degenerative changes of joint ...	Recommended.
Arthritis, glenohumeral:		
X-ray: shoulder	Significant degenerative changes of joint ...	Recommended.
Computerized tomography	Significant degenerative changes of joint ...	Recommended.
Magnetic resonance imaging	Significant degenerative changes of joint ...	Recommended.
Rotator cuff tear:		
Computerized tomography	Tear of rotator cuff	Recommended.
Magnetic resonance imaging	Tear of rotator cuff	Recommended.
Medical diagnosis leading to a permanent functional limitation of the elbow:		
Medical record review	Condition with permanent functional limitation.	Highly recommended.
X-ray: elbow	Imaging confirmation of functional diagnosis.	Recommended.

G. Shoulder and Elbow—Continued

Confirmatory test	Minimum result	Requirements.
Magnetic resonance imaging	Imaging confirmation of functional diagnosis.	Recommended.
Disability test	Test result	Disability classification
BODY PART: SHOULDER AND ELBOW JOB TITLE: TRAINMAN		
Arthritis, acromioclavicular:		
Physical examination—range of motion ...	<40 degrees flexion	D
Physical examination—range of motion ...	<40 degrees abduction	D
Arthritis, glenohumeral:		
Physical examination—range of motion ...	<40 degrees flexion	D
Physical examination—range of motion ...	<40 degrees abduction	D
Rotator cuff tear:		
Physical examination—range of motion ...	<40 degrees flexion	D
Physical examination—range of motion ...	<40 degrees abduction	D
Permanent functional limitation, elbow:		
Physical examination	≤40 degrees deviation	D
Physical examination—range of motion ...	Flexion limit to 60 degrees	D
BODY PART: SHOULDER AND ELBOW JOB TITLE: ENGINEER		
Arthritis, acromioclavicular:		
Physical examination—range of motion ...	<40 degrees flexion	D
Physical examination—range of motion ...	<40 degrees abduction	D
Arthritis, glenohumeral:		
Physical examination—range of motion ...	<40 degrees flexion	D
Physical examination—range of motion ...	<40 degrees abduction	D
Rotator cuff tear:		
Physical examination—range of motion ...	<40 degrees flexion	D
Physical examination—range of motion ...	<40 degrees abduction	D
Permanent functional limitation, elbow:		
Physical examination	≤40 degrees deviation	D
Physical examination—range of motion ...	Flexion limit to 60 degrees	D
BODY PART: SHOULDER AND ELBOW JOB TITLE: CARMAN		
Arthritis, acromioclavicular:		
Physical examination—range of motion ...	<40 degrees flexion	D
Physical examination—range of motion ...	<40 degrees abduction	D
Arthritis, glenohumeral:		
Physical examination—range of motion ...	<40 degrees flexion	D
Physical examination—range of motion ...	<40 degrees abduction	D
Rotator cuff tear:		
Physical examination—range of motion ...	<40 degrees flexion	D
Physical examination—range of motion ...	<40 degrees abduction	D
Permanent functional limitation, elbow:		
Physical examination	≤40 degrees deviation	D
Physical examination—range of motion ...	Flexion limit to 60 degrees	D
BODY PART: SHOULDER AND ELBOW JOB TITLE: SIGNALMAN		
Arthritis, acromioclavicular:		
Physical examination—range of motion ...	<40 degrees flexion	D
Physical examination—range of motion ...	<40 degrees abduction	D
Arthritis, glenohumeral:		
Physical examination—range of motion ...	<40 degrees flexion	D
Physical examination—range of motion ...	<40 degrees abduction	D
Rotator cuff tear:		
Physical examination—range of motion ...	<40 degrees flexion	D
Physical examination—range of motion ...	<40 degrees abduction	D
Permanent functional limitation, elbow:		
Physical examination	≤40 degrees deviation	D
Physical examination—range of motion ...	Flexion limit to 60 degrees	D

Disability test	Test result	Disability classification
BODY PART: SHOULDER AND ELBOW JOB TITLE: TRACKMAN		
Arthritis, acromioclavicular:		
Physical examination—range of motion ...	<40 degrees flexion	D
Physical examination—range of motion ...	<40 degrees abduction	D
Arthritis, glenohumeral:		
Physical examination—range of motion ...	<40 degrees flexion	D
Physical examination—range of motion ...	<40 degrees abduction	D
Rotator cuff tear:		
Physical examination—range of motion ...	<40 degrees flexion	D
Physical examination—range of motion ...	<40 degrees abduction	D
Permanent functional limitation, elbow:		
Physical examination	≤40 degrees deviation	D
Physical examination—range of motion ...	Flexion limit to 60 degrees	D

BODY PART: SHOULDER AND ELBOW JOB TITLE: MACHINIST		
Arthritis, acromioclavicular:		
Physical examination—range of motion ...	<40 degrees flexion	D
Physical examination—range of motion ...	<40 degrees abduction	D
Arthritis, glenohumeral:		
Physical examination—range of motion ...	<40 degrees flexion	D
Physical examination—range of motion ...	<40 degrees abduction	D
Rotator cuff tear:		
Physical examination—range of motion ...	<40 degrees flexion	D
Physical examination—range of motion ...	<40 degrees abduction	D
Permanent functional limitation, elbow:		
Physical examination	≤40 degrees deviation	D
Physical examination—range of motion ...	Flexion limit to 60 degrees	D

BODY PART: SHOULDER AND ELBOW JOB TITLE: SHOP LABORER		
Arthritis, acromioclavicular:		
Physical examination—range of motion ...	<40 degrees flexion	D
Physical examination—range of motion ...	<40 degrees abduction	D
Arthritis, glenohumeral:		
Physical examination—range of motion ...	<40 degrees flexion	D
Physical examination—range of motion ...	<40 degrees abduction	D
Rotator cuff tear:		
Physical examination—range of motion ...	<40 degrees flexion	D
Physical examination—range of motion ...	<40 degrees abduction	D
Permanent functional limitation, elbow:		
Physical examination	≤40 degrees deviation	D
Physical examination—range of motion ...	Flexion limit to 60 degrees	D

H. Hand and Arm

Confirmatory test	Minimum result	Requirements
BODY PART: HAND AND ARM CONFIRMATORY TESTS		
Carpal tunnel syndrome:		
Medical record review	Pain, paresthesia and weakness in distribution median nerve.	Highly recommended.
Nerve conduction testing	Definite median nerve conduction slowing at wrist.	Highly recommended.
Electromyography	Denervation in severe cases	Recommended.
Fracture: wrist:		
X-ray: wrist	Evidence of fracture	Highly recommended.
Hand: permanent functional limitation:		
Medical record review	Documentation of medical condition for permanent limitation.	Highly recommended.
Physical examination	Definite reproducible evidence of limitation	Highly recommended.
Imaging study (e.g. X-ray, CAT, MRI)	Positive confirmation of underlying condition.	Highly recommended.
Rheumatoid arthritis: hand:		
Rheumatoid factor	Titer of rheumatoid factor	Recommended.
Medical record review	History of objective findings including serological studies.	Highly recommended.
X-ray: hand	Characteristic rheumatoid changes	Highly recommended.

H. Hand and Arm—Continued

Confirmatory test	Minimum result	Requirements
Tenosynovitis:		
Medical record review	History of chronic tenosynovitis and objective findings.	Highly recommended.
Physical examination	Definite evidence of tenosynovitis	Highly recommended.
Thumb: Permanent functional limitation:		
Medical record review	Documentation of medical condition for permanent limitation.	Highly recommended.
Physical examination	Definite reproducible evidence of limitation	Highly recommended.
Imaging study (X-ray, CAT, MRI)	Positive confirmation of underlying condition.	Highly recommended.
Wrist: Permanent functional limitation:		
Medical record review	Documentation of medical condition for permanent limitation.	Highly recommended.
Physical examination	Definite reproducible evidence of limitation	Highly recommended.
Imaging study (e.g. X-ray, CAT, MRI)	Positive confirmation of underlying condition.	Highly recommended.
Disability test	Test result	Disability classification
BODY PART: HAND AND ARM JOB TITLE: TRAINMAN		
Fracture, wrist:		
Physical examination—range of motion ...	Extension—limit to 30 degrees	D
Physical examination—range of motion ...	Flexion—limit to 30 degrees	D
Physical examination—range of motion ...	Ankylosis: ≤20 degrees from neutral	D
Rheumatoid arthritis hand:		
Physical examination	Significant deformity	D
Medical record review	Significant flare-ups, under treatment with rheumatologist.	D
Medical record review	Extensive medication use, under treatment with rheumatologist.	D
Thumb: permanent functional limitation:		
Adduction of thumb	Loss ≤4 cm	D
Ankylosis: degree from neutral	<20 degrees extension	D
Ankylosis: degree from neutral	<40 degrees flexion	D
Loss of extension or flexion	MCP or PIP: maximum flexion <40 degrees.	D
Opposition	Loss ≤4 cm	D
Wrist: permanent functional limitation:		
Physical examination—range of motion ...	Extension—limit to 30 degrees	D
Physical examination—range of motion ...	Flexion—limit to 30 degrees	D
Physical examination—range of motion ...	Ankylosis: ≤20 degrees from neutral	D
BODY PART: HAND AND ARM JOB TITLE ENGINEER		
Fracture, wrist:		
Physical examination—range of motion ...	Extension-limit to 30 degrees	D
Physical examination—range of motion ...	Flexion-limit to 30 degrees	D
Physical examination—range of motion ...	Ankylosis: ≤20 degrees from neutral	D
Rheumatoid arthritis hand:		
Physical examination	Significant deformity	D
Medical record review	Significant flare-ups, under treatment with rheumatologist.	D
Medical record review	Extensive medication use, under treatment with rheumatologist.	D
Thumb: permanent functional limitation:		
Adduction of thumb	Loss ≤4 cm	D
Ankylosis: degree from neutral	<20 degrees extension	D
Ankylosis: degree from neutral	<40 degrees flexion	D
Loss of extension or flexion	MCP or PIP: maximum flexion <40 degrees.	D
Opposition	Loss ≤4 cm	D
Wrist: permanent functional limitation:		
Physical examination—range of motion ...	Extension—limit to 30 degrees	D
Physical examination—range of motion ...	Flexion—limit to 30 degrees	D
Physical examination—range of motion ...	Ankylosis: ≤20 degrees from neutral	D

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Disability test	Test result	Disability classification
BODY PART: HAND AND ARM JOB TITLE: DISPATCHER		
Fracture, wrist:		
Physical examination—range of motion ...	Extension—limit to 30 degrees	D
Physical examination—range of motion ...	Flexion—limit to 30 degrees	D
Physical examination—range of motion ...	Ankylosis: ≤20 degrees from neutral	D
Rheumatoid arthritis hand:		
Physical examination	Significant deformity	D
Medical record review	Significant flare-ups, under treatment with rheumatologist.	D
Medical record review	Extensive medication use, under treatment with rheumatologist.	D
Thumb: permanent functional limitation:		
Adduction of thumb	Loss ≤4 cm	D
Ankylosis: degree from neutral	<20 degrees extension	D
Ankylosis: degree from neutral	<40 degrees flexion	D
Loss of extension or flexion	MCP or PIP: maximum flexion <40 degrees.	D
Opposition	Loss ≤4 cm	D
Wrist: permanent functional limitation:		
Physical examination—range of motion ...	Extension—limit to 30 degrees	D
Physical examination—range of motion ...	Flexion—limit to 30 degrees	D
Physical examination—range of motion ...	Ankylosis: ≤20 degrees from neutral	D
BODY PART: HAND AND ARM JOB TITLE: CARMAN		
Fracture, wrist:		
Physical examination—range of motion ...	Extension—limit to 30 degrees	D
Physical examination—range of motion ...	Flexion—limit to 30 degrees	D
Physical examination—range of motion ...	Ankylosis: ≤20 degrees from neutral	D
Rheumatoid arthritis hand:		
Physical examination	Significant deformity	D
Medical record review	Significant flare-ups, under treatment with rheumatologist.	D
Medical record review	Extensive medication use, under treatment with rheumatologist.	D
Thumb: permanent functional limitation:		
Adduction of thumb:	Loss ≤4 cm	D
Ankylosis: degree from neutral	<20 degrees extension	D
Ankylosis: degree from neutral	<40 degrees flexion	D
Loss of extension or flexion	MCP or PIP: maximum flexion <40 degrees.	D
Opposition	Loss ≤4 cm	D
Wrist: permanent functional limitation:		
Physical examination—range of motion ...	Extension—limit to 30 degrees	D
Physical examination—range of motion ...	Flexion—limit to 30 degrees	D
Physical examination—range of motion ...	Ankylosis: ≤20 degrees from neutral	D
BODY PART: HAND AND ARM JOB TITLE: SIGNALMAN		
Fracture, wrist:		
Physical examination—range of motion ...	Extension—limit to 30 degrees	D
Physical examination—range of motion ...	Flexion—limit to 30 degrees	D
Physical examination—range of motion ...	Ankylosis: ≤20 degrees from neutral	D
Rheumatoid arthritis hand:		
Physical examination	Significant deformity	D
Medical record review	Significant flare-ups, under treatment with rheumatologist.	D
Medical record review	Extensive medication use, under treatment with rheumatologist.	D
Thumb: permanent functional limitation:		
Adduction of thumb	Loss ≤4 cm	D
Ankylosis: degree from neutral	<20 degrees extension	D
Ankylosis: degree from neutral	<40 degrees flexion	D
Loss of extension or flexion	MCP or PIP: maximum flexion <40 degrees.	D
Opposition	Loss ≤4 cm	D
Wrist: permanent functional limitation:		
Physical examination—range of motion ...	Extension—limit to 30 degrees	D
Physical examination—range of motion ...	Flexion—limit to 30 degrees	D
Physical examination—range of motion ...	Ankylosis: ≤20 degrees from neutral	D

Disability test	Test result	Disability classification
BODY PART: HAND AND ARM JOB TITLE: TRACKMAN		
Fracture, wrist:		
Physical examination—range of motion ...	Extension—limit to 30 degrees	D
Physical examination—range of motion ...	Flexion --limit to 30 degrees	D
Physical examination—range of motion ...	Ankylosis: ≤20 degrees from neutral	D
Rheumatoid arthritis hand:		
Physical examination	Significant deformity	D
Medical record review	Significant flare-ups, under treatment with rheumatologist.	D
Medical record review	Extensive medication use, under treatment with rheumatologist.	D
Thumb: permanent functional limitation:		
Adduction of thumb	Loss ≤4 cm	D
Ankylosis: degree from neutral	<20 degrees extension	D
Ankylosis: degree from neutral	<40 degrees flexion	D
Loss of extension or flexion	MCP or PIP: maximum flexion <40 degrees.	D
Opposition	Loss ≤4 cm	D
Wrist: permanent functional limitation:		
Physical examination—range of motion ...	Extension— limit to 30 degrees	D
Physical examination—range of motion ...	Flexion—limit to 30 degrees	D
Physical examination—range of motion ...	Ankylosis: ≤20 degrees from neutral	D
BODY PART: HAND AND ARM JOB TITLE: MACHINIST		
Fracture, wrist:		
Physical examination—range of motion ...	Extension—limit to 30 degrees	D
Physical examination—range of motion ...	Flexion—limit to 30 degrees	D
Physical examination—range of motion ...	Ankylosis: ≤20 degrees from neutral	D
Rheumatoid arthritis hand:		
Physical examination	Significant deformity	D
Medical record review	Significant flare-ups, under treatment with rheumatologist.	D
Medical record review	Extensive medication use, under treatment with rheumatologist.	D
Thumb: permanent functional limitation:		
Adduction of thumb	Loss ≤4 cm	D
Ankylosis: degree from neutral	<20 degrees extension	D
Ankylosis: degree from neutral	<40 degrees flexion	D
Loss of extension or flexion	MCP or PIP: maximum flexion <40 degrees.	D
Opposition	Loss ≤4 cm	D
Wrist: permanent functional limitation:		
Physical examination—range of motion ...	Extension—limit to 30 degrees	D
Physical examination—range of motion ...	Flexion—limit to 30 degrees	D
Physical examination—range of motion ...	Ankylosis: ≤20 degrees from neutral	D
BODY PART: HAND AND ARM JOB TITLE: SHOP LABORER		
Fracture, wrist:		
Physical examination—range of motion ...	Extension—limit to 30 degrees	D
Physical examination—range of motion ...	Flexion—limit to 30 degrees	D
Physical examination—range of motion ...	Ankylosis: ≤20 degrees from neutral	D
Rheumatoid arthritis hand:		
Physical examination	Significant deformity	D
Medical record review	Significant flare-ups, under treatment with rheumatologist.	D
Medical record review	Extensive medication use, under treatment with rheumatologist.	D
Thumb: permanent functional limitation:		
Adduction of thumb	Loss ≤4 cm	D
Ankylosis: degree from neutral	<20 degrees extension	D
Ankylosis: degree from neutral	<40 degrees flexion	D
Loss of extension or flexion	MCP or PIP: maximum flexion <40 degrees.	D
Opposition	Loss ≤4 cm	D
Wrist: permanent functional limitation:		
Physical examination—range of motion ...	Extension—limit to 30 degrees	D
Physical examination—range of motion ...	Flexion—limit to 30 degrees	D
Physical examination—range of motion ...	Ankylosis: ≤20 degrees from neutral	D

Disability test	Test result	Disability classification
BODY PART: HAND AND ARM JOB TITLE: SALES REPRESENTATIVE		
Fracture, wrist:		
Physical examination—range of motion ...	Extension—limit to 30 degrees	D
Physical examination—range of motion ...	Flexion—limit to 30 degrees	D
Physical examination—range of motion ...	Ankylosis: ≤20 degrees from neutral	D
Rheumatoid arthritis hand:		
Physical examination	Significant deformity	D
Medical record review	Significant flare-ups, under treatment with rheumatologist.	D
Medical record review	Extensive medication use, under treatment with rheumatologist.	D
Thumb: permanent functional limitation:		
Adduction of thumb	Loss ≤4 cm	D
Ankylosis: degree from neutral	<20 degrees extension	D
Ankylosis: degree from neutral	<40 degrees flexion	D
Loss of extension or flexion	MCP or PIP: maximum flexion <40 degrees.	D
Opposition	Loss ≤4 cm	D
Wrist: permanent functional limitation:		
Physical examination—range of motion ...	Extension—limit to 30 degrees	D
Physical examination—range of motion ...	Flexion—limit to 30 degrees	D
Physical examination—range of motion ...	Ankylosis: ≤20 degrees from neutral	D

BODY PART: HAND AND ARM JOB TITLE: GENERAL OFFICE CLERK		
Fracture, wrist:		
Physical examination—range of motion ...	Extension—limit to 30 degrees	D
Physical examination—range of motion ...	Flexion—limit to 30 degrees	D
Physical examination—range of motion ...	Ankylosis: ≤20 degrees from neutral	D
Rheumatoid arthritis hand:		
Physical examination	Significant deformity	D
Medical record review	Significant flare-ups, under treatment with rheumatologist.	D
Medical record review	Extensive medication use, under treatment with rheumatologist.	D
Thumb: permanent functional limitation:		
Adduction of thumb	Loss ≤4 cm	D
Ankylosis: degree from neutral	<20 degree extension	D
Ankylosis: degree from neutral	<40 degree flexion	D
Loss of extension or flexion	MCP or PIP: maximum flexion <40 degrees.	D
Opposition	Loss ≤4 cm	D
Wrist: permanent functional limitation:		
Physical examination—range of motion ...	Extension—limit to 30 degrees	D
Physical examination—range of motion ...	Flexion—limit to 30 degrees	D
Physical examination—range of motion ...	Ankylosis: ≤20 degrees from neutral	D

I. Hip

Confirmatory test	Minimum result	Requirements
BODY PART: HIP CONFIRMATORY TESTS		
Ankylosis, hip:		
X-ray: hip	Extreme joint destruction	Highly Recommended.
Physical examination—range of motion ...	No mobility	Highly Recommended.
Osteoarthritis, hip:		
X-ray: hip	<4 mm joint space, or other positive evidence.	Recommended.
Magnetic resonance imaging	<4 mm joint space, or other positive evidence.	Recommended.
Computerized axial tomography	<4 mm joint space, or other positive evidence.	Recommended.
Osteomyelitis, hip:		
X-ray: hip	Evidence of chronic infection	Recommended.
Computerized axial tomography	Evidence of chronic infection	Recommended.
Paget's disease:		
X-ray: hip	Osteolytic or blastic lesions	Highly Recommended.
Alkaline phosphatase	Increased up to 50 times	Highly Recommended.

I. Hip—Continued

Confirmatory test	Minimum result	Requirements
Hip replacement surgery: X-ray: hip Medical record review	Evidence of artificial hip Documentation of prior hip replacement	Recommended. Recommended.
Disability test	Test result	Disability classification
BODY PART: HIP JOB TITLE: TRAINMAN		
Ankylosis, hip: Physical examination—range of motion ... Physical examination—range of motion ... Physical examination—range of motion ... Physical examination—range of motion ... Physical examination—range of motion ... Osteoarthritis, hip: X-ray: hip Physical examination—range of motion ... Physical examination—range of motion ... Physical examination—range of motion ... Osteomyelitis, chronic hip: X-ray: hip Physical examination—range of motion ... Physical examination—range of motion ... Physical examination—range of motion ... Medical record review	Ankylosis 5 degrees or ≤flexion Ankylosis internal rotation ≤5 degrees Ankylosis external rotation ≤10 degrees Ankylosis in abduction ≤5 degrees Ankylosis in adduction ≤5 degrees 0 mm cartilage interval 30 degrees flexion contracture <50 degrees flexion <5 degrees abduction Significant joint destruction 30 degrees flexion contracture <50 degrees flexion <5 degrees abduction Documented occurrence of recurring infections with treatment.	D D D D D D D D D D D D D D D
Paget's disease: X-ray: hip Physical examination—range of motion ... Physical examination—range of motion ... Physical examination—range of motion ... Hip replacement surgery: X-ray: hip Medical record review	Significant joint destruction 30 degrees flexion contracture <50 degrees flexion <5 degrees abduction Evidence of artificial hip joint Documentation of prior hip replacement	D D D D D D
BODY PART: HIP JOB TITLE: ENGINEER		
Ankylosis, hip: Physical examination—range of motion ... Physical examination—range of motion ... Physical examination—range of motion ... Physical examination—range of motion ... Physical examination—range of motion ... Osteoarthritis, hip: X-ray: hip Physical examination—range of motion ... Physical examination—range of motion ... Physical examination—range of motion ... Osteomyelitis, chronic hip: X-ray: hip Physical examination—range of motion ... Physical examination—range of motion ... Physical examination—range of motion ... Medical record review	Ankylosis 5 degrees or ≤flexion Ankylosis internal rotation ≤5 degrees Ankylosis external rotation ≤10 degrees Ankylosis in abduction ≤5 degrees Ankylosis in adduction ≤5 degrees 0 mm cartilage interval 30 degrees flexion contracture <50 degrees flexion <5 degrees abduction Significant joint destruction 30 degrees flexion contracture <50 degrees flexion <5 degrees abduction Documented occurrence of recurring infections with treatment.	D D D D D D D D D D D D D D
Paget's disease: X-ray: hip Physical examination—range of motion ... Physical examination—range of motion ... Physical examination—range of motion ... Hip replacement surgery: X-ray: hip Medical record review	Significant joint destruction 30 degrees flexion contracture <50 degrees flexion <5 degrees abduction Evidence of artificial hip joint Documentation of prior hip replacement	D D D D D D
BODY PART: HIP JOB TITLE: CARMAN		
Ankylosis, hip: Physical examination—range of motion ... Physical examination—range of motion ...	Ankylosis 5 degrees or ≤flexion Ankylosis internal rotation ≤5 degrees	D D

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Disability test	Test result	Disability classification
Physical examination—range of motion ...	Ankylosis external rotation ≤10 degrees	D
Physical examination—range of motion ...	Ankylosis in abduction ≤5 degrees	D
Physical examination—range of motion ...	Ankylosis in adduction ≤5 degrees	D
Osteoarthritis, hip:		
X-ray: hip	0 mm cartilage interval	D
Physical examination—range of motion ...	30 degrees flexion contracture	D
Physical examination—range of motion ...	<50 degrees flexion	D
Physical examination—range of motion ...	<5 degrees abduction	D
Osteomyelitis, chronic hip:		
X-ray: hip	Significant joint destruction	D
Physical examination—range of motion ...	30 degrees flexion contracture	D
Physical examination—range of motion ...	<50 degrees flexion	D
Physical examination—range of motion ...	<5 degrees abduction	D
Medical record review	Documented occurrence of recurring infections with treatment.	D
Paget's disease:		
X-ray: hip	Significant joint destruction	D
Physical examination—range of motion ...	30 degrees flexion contracture	D
Physical examination—range of motion ...	<50 degrees flexion	D
Physical examination—range of motion ...	<5 degrees abduction	D
Hip replacement surgery:		
X-ray: hip	Evidence of artificial hip joint	D
Medical record review	Documentation of prior hip replacement	D

**BODY PART: HIP
JOB TITLE: SIGNALMAN**

Ankylosis, hip:		
Physical examination—range of motion ...	Ankylosis 5 degrees or ≤flexion	D
Physical examination—range of motion ...	Ankylosis internal rotation ≤5 degrees	D
Physical examination—range of motion ...	Ankylosis external rotation ≤10 degrees	D
Physical examination—range of motion ...	Ankylosis in abduction ≤5 degrees	D
Physical examination—range of motion ...	Ankylosis in adduction ≤5 degrees	D
Osteoarthritis, hip:		
X-ray: hip	0 mm cartilage interval	D
Physical examination—range of motion ...	30 degrees flexion contracture	D
Physical examination—range of motion ...	<50 degrees flexion	D
Physical examination—range of motion ...	<5 degrees abduction	D
Osteomyelitis, chronic hip:		
X-ray: hip	Significant joint destruction	D
Physical examination—range of motion ...	30 degrees flexion contracture	D
Physical examination—range of motion ...	<50 degrees flexion	D
Physical examination—range of motion ...	<5 degrees abduction	D
Medical record review	Documented occurrence of recurring infections with treatment.	D
Paget's disease:		
X-ray: hip	Significant joint destruction	D
Physical examination—range of motion ...	30 degrees flexion contracture	D
Physical examination—range of motion ...	<50 degrees flexion	D
Physical examination—range of motion ...	<5 degrees abduction	D
Hip replacement surgery:		
X-ray: hip	Evidence of artificial hip joint	D
Medical record review	Documentation of prior hip replacement	D

**BODY PART: HIP
JOB TITLE: TRACKMAN**

Ankylosis, hip:		
Physical examination—range of motion ...	Ankylosis 5 degrees or ≤flexion	D
Physical examination—range of motion ...	Ankylosis internal rotation ≤5 degrees	D
Physical examination—range of motion ...	Ankylosis external rotation ≤10 degrees	D
Physical examination—range of motion ...	Ankylosis in abduction ≤5 degrees	D
Physical examination—range of motion ...	Ankylosis in adduction ≤5 degrees	D
Osteoarthritis, hip:		
X-ray: hip	0 mm cartilage interval	D
Physical examination—range of motion ...	30 degrees flexion contracture	D
Physical examination—range of motion ...	<50 degrees flexion	D
Physical examination—range of motion ...	<5 degrees abduction	D
Osteomyelitis, chronic hip:		
X-ray: hip	Significant joint destruction	D
Physical examination—range of motion ...	30 degrees flexion contracture	D
Physical examination—range of motion ...	<50 degrees flexion	D
Physical examination—range of motion ...	<5 degrees abduction	D
Medical record review	Documented occurrence of recurring infections with treatment.	D

Disability test	Test result	Disability classification
Paget's disease:		
X-ray: hip	Significant joint destruction	D
Physical examination—range of motion ...	30 degrees flexion contracture	D
Physical examination—range of motion ...	<50 degrees flexion	D
Physical examination—range of motion ...	<5 degrees abduction	D
Hip replacement surgery:		
X-ray: hip	Evidence of artificial hip joint	D
Medical record review	Documentation of prior hip replacement	D
BODY PART: HIP JOB TITLE: MACHINIST		
Ankylosis, hip:		
Physical examination—range of motion ...	Ankylosis 5 degrees or ≤flexion	D
Physical examination—range of motion ...	Ankylosis internal rotation ≤5 degrees	D
Physical examination—range of motion ...	Ankylosis external rotation ≤10 degrees	D
Physical examination—range of motion ...	Ankylosis in abduction ≤5 degrees	D
Physical examination—range of motion ...	Ankylosis in adduction ≤5 degrees	D
Osteoarthritis, hip:		
X-ray: hip	0 mm cartilage interval	D
Physical examination—range of motion ...	30 degrees flexion contracture	D
Physical examination—range of motion ...	<50 degrees flexion	D
Physical examination—range of motion ...	<5 degrees abduction	D
Osteomyelitis, chronic hip:		
X-ray: hip	Significant joint destruction	D
Physical examination—range of motion ...	30 degrees flexion contracture	D
Physical examination—range of motion ...	<50 degrees flexion	D
Physical examination—range of motion ...	<5 degrees abduction	D
Medical record review	Documented occurrence of recurring infections with treatment.	D
Paget's disease:		
X-ray: hip	Significant joint destruction	D
Physical examination—range of motion ...	30 degrees flexion contracture	D
Physical examination—range of motion ...	<50 degrees flexion	D
Physical examination—range of motion ...	<5 degrees abduction	D
Hip replacement surgery:		
X-ray: hip	Evidence of artificial hip joint	D
Medical record review	Documentation of prior hip replacement	D
BODY PART: HIP JOB TITLE: SHOP LABORER		
Ankylosis, hip:		
Physical examination—range of motion ...	Ankylosis 5 degrees of ≤flexion	D
Physical examination—range of motion ...	Ankylosis internal rotation ≤5 degrees	D
Physical examination—range of motion ...	Ankylosis external rotation ≤10 degrees	D
Physical examination—range of motion ...	Ankylosis in abduction ≤5 degrees	D
Physical examination—range of motion ...	Ankylosis in adduction ≤5 degrees	D
Osteoarthritis, hip:		
X-ray: hip	0 mm cartilage interval	D
Physical examination—range of motion ...	30 degrees flexion contracture	D
Physical examination—range of motion ...	<50 degrees flexion	D
Physical examination—range of motion ...	<5 degrees abduction	D
Osteomyelitis, chronic hip:		
X-ray: hip	Significant joint destruction	D
Physical examination—range of motion ...	30 degrees flexion contracture	D
Physical examination—range of motion ...	<50 degrees flexion	D
Physical examination—range of motion ...	<5 degrees abduction	D
Medical record review	Documented occurrence of recurring infections with treatment.	D
Paget's disease:		
X-ray: hip	Significant joint destruction	D
Physical examination—range of motion ...	30 degrees flexion contracture	D
Physical examination—range of motion ...	<50 degrees flexion	D
Physical examination—range of motion ...	<5 degrees abduction	D
Hip replacement surgery:		
X-ray: hip	Evidence of artificial hip joint	D
Medical record review	Documentation of prior hip replacement	D

J. Knee

Confirmatory test	Minimum result	Requirements
BODY PART: KNEE CONFIRMATORY TESTS		
Arthritis: knee: X-ray: knee	Evidence of significant degenerative changes.	Recommended.
Collateral ligament tear with laxity: Physical examination: knee	Evidence of ligamentous laxity	Highly Recommended.
Magnetic resonance imaging	Evidence of ligamentous tear	Recommended.
Cruciate and collateral ligament tear with laxity: Magnetic resonance imaging	Tear of both ligaments	Recommended.
Physical examination	Evidence of ligamentous laxity	Highly Recommended.
Medical record review	Documentation of tear by arthroscopy	Recommended.
Cruciate ligament tear with laxity: Physical examination: knee	Evidence of ligamentous laxity	Highly Recommended.
Magnetic resonance imaging	Evidence of cruciate tear	Recommended.
Medical record review	Documentation of tear by arthroscopy	Recommended.
Intercondylar fracture: X-ray: knee	Evidence of fracture	Highly Recommended.
Osteomyelitis: knee: Medical record review	Documented history of osteomyelitis requiring treatment.	Highly Recommended.
X-ray: knee	Evidence of chronic infection	Recommended.
Computerized tomography	Evidence of chronic infection	Recommended.
Magnetic resonance imaging	Evidence of chronic infection	Recommended.
Osteonecrosis: X-ray: knee	Necrosis of femoral condyle or tibial plateau.	Recommended.
Computerized tomography	Necrosis of femoral condyle or tibial plateau.	Recommended.
Magnetic resonance imaging	Necrosis of femoral condyle or tibial plateau.	Recommended.
Patellofemoral arthritis: X-ray: knee	Evidence of arthritis	Recommended.
Magnetic resonance imaging	Evidence of arthritis	Recommended.
Physical examination	Crepitation with movement	Highly Recommended.
Patellar fracture nonunion with displacement: X-ray: knee	Nonunion and displacement	Recommended.
Magnetic resonance imaging	Nonunion and displacement	Recommended.
Computerized tomography	Nonunion and displacement	Recommended.
Plateau fracture: X-ray: knee	Evidence of fracture	Recommended.
Computerized tomography	Evidence of fracture	Recommended.
Magnetic resonance imaging	Evidence of fracture	Recommended.
Meniscectomy—medial or lateral: Medical record review	History of surgery	Highly Recommended.
Patellectomy: Physical examination: knee	Absent patella	Highly Recommended.
Patellar—subluxation—recurrent: Medical record review	History of recurrent subluxation	Highly Recommended.
Supracondylar fracture: X-ray: knee	Evidence of fracture	Recommended.
Magnetic resonance imaging	Evidence of fracture	Recommended.
Computerized tomography	Evidence of fracture	Recommended.
Total knee replacement: X-ray: knee	Presence of replacement knee	Recommended.
Medical record review	Documented surgical history	Recommended.
Tibial shaft fracture: X-ray: leg	Fracture of shaft	Recommended.
Magnetic resonance imaging	Evidence of fracture	Recommended.
Computerized tomography	Evidence of fracture	Recommended.

Disability test	Test result	Disability classification
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**BODY PART: KNEE
JOB TITLE: TRAINMAN**

Arthritis knee: Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D

Disability test	Test result	Disability classification
Physical examination	Valgus deformity, 16-20 degrees	D
Physical examination	Varus deformity, 8-12 degrees	D
X-ray knee	0-1 mm cartilage interval with degenerative change.	D
Meniscectomy, medial or lateral:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Collateral ligament tear with laxity:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Cruciate and collateral ligament tear:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Cruciate ligament tear with laxity:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Intercondylar fracture:		
Post fracture angulation	≤20 degrees angulation	D
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Osteomyelitis, chronic knee:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Physical examination	Valgus deformity, 16-20 degrees	D
Physical examination	Varus deformity, 8-12 degrees	D
Medical record review	Frequent episodes of infection requiring treatment.	D
X-ray knee	0-1 mm cartilage interval with degenerative change.	D
Osteonecrosis:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Physical examination	Valgus deformity, 16-20 degrees	D
Physical examination	Varus deformity, 8-12 degrees	D
X-ray knee	0-1 mm cartilage interval with degenerative change.	D
Patellofemoral arthritis:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Physical examination	Valgus deformity, 16-20 degrees	D
Physical examination	Varus deformity, 8-12 degrees	D
X-ray knee: patello femoral joint	0 mm cartilage interval with degenerative change.	D
Patellar fracture nonunion with displacement:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
X-ray knee	Nonunion and ≤3 mm displacement	D
Plateau fracture:		
Post fracture angulation	≤20 degrees angulation	D
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Patellectomy:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Patellar, subluxation, recurrent:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Supracondylar fracture:		
Post fracture angulation	≤20 degrees angulation	D
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Tibial shaft fracture:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Post fracture angulation	≤20 degrees malalignment	D
BODY PART: KNEE JOB TITLE: ENGINEER		
Arthritis knee:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Physical examination	Valgus deformity, 16-20 degrees	D

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Disability test	Test result	Disability classification
Physical examination	Varus deformity, 8–12 degrees	D
X-ray knee	0–1 mm cartilage interval with degenerative change.	D
Meniscectomy, medial or lateral:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Collateral ligament tear with laxity:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Cruciate and collateral ligament tear:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Cruciate ligament tear with laxity:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Intercondylar fracture:		
Post fracture angulation	≤20 degrees angulation	D
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Osteomyelitis, chronic knee:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Physical examination	Valgus deformity, 16–20 degrees	D
Physical examination	Varus deformity, 8–12 degrees	D
Medical record review	Frequent episodes of infection requiring treatment.	D
X-ray knee	0–1 mm cartilage interval with degenerative change.	D
Osteonecrosis:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Physical examination	Valgus deformity, 16–20 degrees	D
Physical examination	Varus deformity, 8–12 degrees	D
X-ray knee	0–1 mm cartilage interval with degenerative change.	D
Patellofemoral arthritis:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Physical examination	Valgus deformity, 16–20 degrees	D
Physical examination	Varus deformity, 8–12 degrees	D
X-ray knee: patello femoral joint	0 mm cartilage interval with degenerative change.	D
Patellar fracture nonunion with displacement:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
X-ray knee	Nonunion and ≤3 mm displacement	D
Plateau fracture:		
Post fracture angulation	≤20 degrees angulation	D
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Patellectomy:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Patellar, subluxation, recurrent:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Supracondylar fracture:		
Post fracture angulation	≤20 degrees angulation	D
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Tibial shaft fracture:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Post fracture angulation	≤20 degrees malalignment	D

**BODY PART: KNEE
JOB TITLE: CARMAN**

Arthritis knee:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Physical examination	Valgus deformity, 16–20 degrees	D
Physical examination	Varus deformity, 8–12 degrees	D

Disability test	Test result	Disability classification
X-ray knee	0-1 mm cartilage interval with degenerative change.	D
Meniscectomy, medial or lateral:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Collateral ligament tear with laxity:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Cruciate and collateral ligament tear:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Cruciate ligament tear with laxity:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Intercondylar fracture:		
Post fracture angulation	≤20 degrees angulation	D
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Osteomyelitis, chronic knee:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Physical examination	Valgus deformity, 16-20 degrees	D
Physical examination	Varus deformity, 8-12 degrees	D
Medical record review	Frequent episodes of infection requiring treatment.	D
X-ray knee	0-1 mm cartilage interval with degenerative change.	D
Osteonecrosis:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Physical examination	Valgus deformity, 16-20 degrees	D
Physical examination	Varus deformity, 8-12 degrees	D
X-ray knee	0-1 mm cartilage interval with degenerative change.	D
Patellofemoral arthritis:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Physical examination	Valgus deformity, 16-20 degrees	D
Physical examination	Varus deformity, 8-12 degrees	D
X-ray knee: patello femoral joint	0 mm cartilage interval with degenerative change.	D
Patellar fracture nonunion with displacement:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
X-ray knee	Nonunion and ≤3 mm displacement	D
Plateau fracture:		
Post fracture angulation	≤20 degrees angulation	D
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Patellectomy:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Patellar, subluxation, recurrent:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Supracondylar fracture:		
Post fracture angulation	≤20 degrees angulation	D
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Tibial shaft fracture:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Post fracture angulation	≤20 degrees malalignment	D
BODY PART: KNEE JOB TITLE: SIGNALMAN		
Arthritis knee:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Physical examination	Valgus deformity, 16-20 degrees	D
Physical examination	Varus deformity, 8-12 degrees	D
X-ray knee	0-1 mm cartilage interval with degenerative change.	D

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Disability test	Test result	Disability classification
Meniscectomy, medial or lateral:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Collateral ligament tear with laxity:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Cruciate and collateral ligament tear:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Cruciate ligament tear with laxity:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Intercondylar fracture:		
Post fracture angulation	≤20 degrees angulation	D
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Osteomyelitis, chronic knee:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Physical examination	Valgus deformity, 16–20 degrees	D
Physical examination	Varus deformity, 8–12 degrees	D
Medical record review	Frequent episodes of infection requiring treatment.	D
X-ray knee	0–1 mm cartilage interval with degenerative change.	D
Osteonecrosis:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Physical examination	Valgus deformity, 16–20 degrees	D
Physical examination	Varus deformity, 8–12 degrees	D
X-ray knee	0–1 mm cartilage interval with degenerative change.	D
Patellofemoral arthritis:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Physical examination	Valgus deformity, 16–20 degrees	D
Physical examination	Varus deformity, 8–12 degrees	D
X-ray knee: patello femoral joint	0 mm cartilage interval with degenerative change.	D
Patellar fracture nonunion with displacement:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
X-ray knee	Nonunion and ≤3 mm displacement	D
Plateau fracture:		
Post fracture angulation	≤20 degrees angulation	D
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Patellectomy:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Patellar, subluxation, recurrent:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Supracondylar fracture:		
Post fracture angulation	≤20 degrees angulation	D
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Tibial shaft fracture:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Post fracture angulation	≤20 degrees malalignment	D

**BODY PART: KNEE
JOB TITLE: TRACKMAN**

Arthritis knee:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Physical examination	Valgus deformity, 16–20 degrees	D
Physical examination	Varus deformity, 8–12 degrees	D
X-ray knee	0–1 mm cartilage interval with degenerative change.	D
Meniscectomy, medial or lateral:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D

Disability test	Test result	Disability classification
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Collateral ligament tear with laxity:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Cruciate and collateral ligament tear:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Cruciate ligament tear with laxity:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Intercondylar fracture:		
Post fracture angulation	≤20 degree angulation	D
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Osteomyelitis, chronic knee:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Physical examination	Valgus deformity, 16–20 degrees	D
Physical examination	Varus deformity, 8–12 degrees	D
Medical record review	Frequent episodes of infection requiring treatment.	D
X-ray knee	0–1 mm cartilage interval with degenerative change.	D
Osteonecrosis:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Physical examination	Valgus deformity, 16–20 degrees	D
Physical examination	Varus deformity, 8–12 degrees	D
X-ray knee	0–1 mm cartilage interval with degenerative change.	D
Patellofemoral arthritis:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Physical examination	Valgus deformity, 16–20 degrees	D
Physical examination	Varus deformity, 8–12 degrees	D
X-ray knee: patello femoral joint	0 mm cartilage interval with degenerative change.	D
Patellar fracture nonunion with displacement:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
X-ray knee	Nonunion and ≤3 mm displacement	D
Plateau fracture:		
Post fracture angulation	≤20 degrees angulation	D
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Patellectomy:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Patellar, subluxation, recurrent:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Supracondylar fracture:		
Post fracture angulation	≤20 degrees angulation	D
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Tibial shaft fracture:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Post fracture angulation	≤20 degrees malalignment	D

**BODY PART: KNEE
JOB TITLE: MACHINIST**

Arthritis knee:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Physical examination	Valgus deformity, 16–20 degrees	D
Physical examination	Varus deformity, 8–12 degrees	D
X-ray knee	0–1 mm cartilage interval with degenerative change.	D
Menisectomy, medial or lateral:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D

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Disability test	Test result	Disability classification
Collateral ligament tear with laxity:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Cruciate and collateral ligament tear:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Cruciate ligament tear with laxity:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Intercondylar fracture:		
Post fracture angulation	≤20 degrees angulation	D
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Osteomyelitis, chronic knee:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Physical examination	Valgus deformity, 16–20 degrees	D
Physical examination	Varus deformity, 8–12 degrees	D
Medical record review	Frequent episodes of infection requiring treatment.	D
X-ray knee	0–1 mm cartilage interval with degenerative change.	D
Osteonecrosis:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Physical examination	Valgus deformity, 16–20 degrees	D
Physical examination	Varus deformity, 8–12 degrees	D
X-ray knee	0–1 mm cartilage interval with degenerative change.	D
Patellofemoral arthritis:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Physical examination	Valgus deformity, 16–20 degrees	D
Physical examination	Varus deformity, 8–12 degrees	D
X-ray knee	0 mm cartilage interval with degenerative change.	D
Patellar fracture nonunion with displacement:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
X-ray knee	Nonunion and ≤3 mm displacement	D
Plateau fracture:		
Post fracture angulation	≤20 degrees angulation	D
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Patellectomy:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Patellar, subluxation, recurrent:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Supracondylar fracture:		
Post fracture angulation	≤20 degrees angulation	D
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Tibial shaft fracture:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Post fracture angulation	≤20 degrees malalignment	D

**BODY PART: KNEE
JOB TITLE: SHOP LABORER**

Arthritis knee:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Physical examination	Valgus deformity, 16–20 degrees	D
Physical examination	Varus deformity, 8–12 degrees	D
X-ray knee	0–1 mm cartilage interval with degenerative change.	D
Meniscectomy, medial or lateral:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Collateral ligament tear with laxity:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D

Disability test	Test result	Disability classification
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Cruciate and collateral ligament tear:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Cruciate ligament tear with laxity:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Intercondylar fracture:		
Post fracture angulation	≤20 degrees angulation	D
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Osteomyelitis, chronic knee:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Physical examination	Valgus deformity, 16–20 degrees	D
Physical examination	Varus deformity, 8–12 degrees	D
Medical record review	Frequent episodes of infection requiring treatment.	D
X-ray knee	0–1 mm cartilage interval with degenerative change.	D
Osteonecrosis:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Physical examination	Valgus deformity, 16–20 degrees	D
Physical examination	Varus deformity, 8–12 degrees	D
X-ray knee	0–1 mm cartilage interval with degenerative change.	D
Patellofemoral arthritis:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Physical examination	Valgus deformity, 16–20 degrees	D
Physical examination	Varus deformity, 8–12 degrees	D
X-ray knee: patellofemoral joint	0 mm cartilage interval with degenerative change.	D
Patellar fracture nonunion with displacement:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
X-ray knee	Nonunion and ≤3 mm displacement	D
Plateau fracture:		
Post fracture angulation	≤20 degrees angulation	D
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Patellectomy:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Patellar, subluxation, recurrent:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Supracondylar fracture:		
Post fracture angulation	≤20 degrees angulation	D
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Tibial shaft fracture:		
Physical examination—range of motion ...	Range of motion: flexion <60 degrees	D
Physical examination—range of motion ...	Flexion contracture (20 or ≤ degrees)	D
Post fracture angulation	≤20 degrees malalignment	D

K. Ankle and Foot

Confirmatory test	Minimum result	Requirements
BODY PART: ANKLE AND FOOT CONFIRMATORY TESTS		
Ankle fracture:		
Medical record review	Documented history of ankle fracture	Recommended.
X-ray: ankle	Ankle fracture	Highly recommended.
Ankylosis, ankle:		
X-ray: ankle	Extensive joint destruction	Highly recommended.
Physical examination	No mobility	Highly recommended.
Arthritis, subtalar joint:		
X-ray: ankle	Evidence of significant arthritis: subtalar joint.	Highly recommended.

K. Ankle and Foot—Continued

Confirmatory test	Minimum result	Requirements
Arthritis, talonavicular joint: X-ray: ankle	Significant arthritis: talonavicular joint	Highly recommended.
Achilles tendon rupture: Medical record review	Documentation of achilles tendon rupture ..	Highly recommended.
Physical examination	Rupture of achilles tendon	Highly recommended.
Arthritis, ankle: X-ray: ankle	Significant arthritis	Highly recommended.
Hindfoot fracture: X-ray: foot and ankle	Documentation of fracture	Highly recommended.
Rheumatoid arthritis, foot: Medical History	Documented history of condition	Highly recommended.
X-ray: foot	Significant arthritis	Highly recommended.

Disability test	Test result	Disability classification
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**BODY PART: ANKLE AND FOOT
JOB TITLE: TRAINMAN**

Ankle fracture: X-ray: ankle	Displaced intra-articular fracture	D
Physical examination	Varus deformity ≤15 degrees	D
Physical examination—range of motion ...	Plantar flexion capability <5 degrees	D
Physical examination—range of motion ...	Plantar flexion contracture 20 degrees	D
Ankylosis, ankle: Physical examination—range of motion ...	Ankylosis in 20 degree or ≤ dorsiflexion ...	D
Physical examination—range of motion ...	Ankylosis in 20 degree plantar flexion	D
Physical examination—range of motion ...	Ankylosis in int or ext malrotation ≤15 de- grees.	D
Physical examination—range of motion ...	Ankylosis in varus 10 or more degrees	D
Physical examination—range of motion ...	Ankylosis in valgus 10 or more degrees ...	D
Arthritis, subtalar joint (hindfoot): X-ray: ankle—subtalar joint	Subtalar joint space 0 mm	D
Physical examination—range of motion ...	Plantar flexion capability <5 degrees	D
Physical examination—range of motion ...	Plantar flexion contracture 20 degrees	D
Physical examination	Varus deformity ≤15 degrees	D
Arthritis, talonavicular joint (hindfoot): Physical examination—range of motion ...	Plantar flexion capability <5 degrees	D
Physical examination—range of motion ...	Plantar flexion contracture 20 degrees	D
X-ray: ankle—talonavicular joint	Talonavicular joint space 0 mm	D
Physical examination	Varus deformity ≤15 degrees	D
Achilles tendon rupture: Physical examination—range of motion ...	Plantar flexion capability, <5 degrees	D
Physical examination—range of motion ...	Plantar flexion contracture, 20 degrees	D
Arthritis, ankle: X-ray: ankle	0 mm	D
Physical examination—range of motion ...	Plantar flexion capability, <5 degrees	D
Physical examination—range of motion ...	Plantar flexion contracture, 20 degrees	D
Physical examination	Varus deformity ≤15 degrees	D
Hindfoot fracture: X-ray: foot	Calcaneal fracture with Boehler angle <95 degrees.	D
X-ray: foot	Subtalar fracture with Boehler angle <95 degrees.	D
Physical examination	Varus angulation ≤20 degrees (hindfoot) ...	D
Physical examination	Valgus angulation ≤20 degrees (hindfoot) ..	D
Rheumatoid arthritis, foot: X-ray: foot	Significant degeneration	D
Medical record review	Chronic flare-up with treatment	D

**BODY PART: ANKLE AND FOOT
JOB TITLE: ENGINEER**

Ankle fracture: X-ray: ankle	Displaced intra-articular fracture	D
Physical examination	Varus deformity ≤15 degrees	D
Physical examination—range of motion ...	Plantar flexion capability <5 degrees	D
Physical examination—range of motion ...	Plantar flexion contracture 20 degrees	D
Ankylosis, ankle: Physical examination—range of motion ...	Ankylosis in 20 degree or ≤ dorsiflexion ...	D
Physical examination—range of motion ...	Ankylosis in 20 degree plantar flexion	D
Physical examination—range of motion ...	Ankylosis in int or ext malrotation ≤15 de- grees.	D

Disability test	Test result	Disability classification
Physical examination—range of motion ...	Ankylosis in varus 10 or more degrees	D
Physical examination—range of motion ...	Ankylosis in valgus 10 or more degrees	D
Arthritis, subtalar joint (hindfoot):		
X-ray: ankle—subtalar joint	Subtalar joint space 0 mm	D
Physical examination—range of motion ...	Plantar flexion capability <5 degrees	D
Physical examination—range of motion ...	Plantar flexion contracture 20 degrees	D
Physical examination	Varus deformity ≤15 degrees	D
Arthritis, talonavicular joint (hindfoot):		
Physical examination—range of motion ...	Plantar flexion capability <5 degrees	D
Physical examination—range of motion ...	Plantar flexion contracture 20 degrees	D
X-ray ankle—talonavicular joint	Talonavicular joint space 0 mm	D
Physical examination	Varus deformity ≤15 degrees	D
Achilles tendon rupture:		
Physical examination—range of motion ...	Plantar flexion capability <5 degrees	D
Physical examination—range of motion ...	Plantar flexion contracture 20 degrees	D
Arthritis, ankle:		
X-ray: ankle	0 mm	D
Physical examination—range of motion ...	Plantar flexion capability <5 degrees	D
Physical examination—range of motion ...	Plantar flexion contracture 20 degrees	D
Physical examination	Varus deformity ≤15 degrees	D
Hindfoot fracture:		
X-ray: foot	Calcaneal fracture with Boehler angle <95 degrees.	D
X-ray: foot	Subtalar fracture with Boehler angle <95 degrees.	D
Physical examination	Varus angulation ≤20 degrees (hindfoot) ...	D
Physical examination	Valgus angulation ≤20 degrees (hindfoot) ..	D
Rheumatoid arthritis, foot:		
X-ray: foot	Significant degeneration	D
Medical record review	Chronic flare-up with treatment	D

**BODY PART: ANKLE AND FOOT
JOB TITLE: DISPATCHER**

Achilles tendon rupture:		
Physical examination—range of motion ...	Plantar flexion capability <5 degrees	D
Physical examination—range of motion ...	Plantar flexion contracture 20 degrees	D
Arthritis, ankle:		
X-ray: ankle	0 mm	D
Physical examination—range of motion ...	Plantar flexion capability <5 degrees	D
Physical examination—range of motion ...	Plantar flexion contracture 20 degrees	D
Physical examination	Varus deformity ≤15 degrees	D
Hindfoot fracture:		
X-ray: foot	Calcaneal fracture with Boehler angle <95 degrees.	D
X-ray: foot	Subtalar fracture with Boehler angle <95 degrees.	D
Physical examination	Varus angulation ≤20 degrees (hindfoot) ...	D
Physical examination	Valgus angulation ≤20 degrees (hindfoot) ..	D
Rheumatoid arthritis, foot:		
X-ray: foot	Significant degeneration	D
Medical record review	Chronic flare-up with treatment	D

**BODY PART: ANKLE AND FOOT
JOB TITLE: CARMAN**

Ankle fracture:		
X-ray: ankle	Displaced intra-articular fracture	D
Physical examination	Varus deformity ≤15 degrees	D
Physical examination—range of motion ...	Plantar flexion capability <5 degrees	D
Physical examination—range of motion ...	Plantar flexion contracture 20 degrees	D
Ankylosis, ankle:		
Physical examination—range of motion ...	Ankylosis in 20 degree or ≤ dorisiflexion	D
Physical examination—range of motion ...	Ankylosis in 20 degree plantar flexion	D
Physical examination—range of motion ...	Ankylois in int or ext malrotation ≤15 degrees.	D
Physical examination—range of motion ...	Ankylosis in varus 10 or more degrees	D
Physical examination—range of motion ...	Ankylosis in valgus 10 or more degrees	D
Arthritis, subtalar joint (hindfoot):		
X-ray: ankle—subtalar joint	Subtalar joint space 0 mm	D
Physical examination—range of motion ...	Plantar flexion capability <5 degrees	D
Physical examination—range of motion ...	Plantar flexion contracture 20 degrees	D
Physical examination	Varus deformity ≤15 degrees	D
Arthritis, talonavicular joint (hindfoot):		
Physical examination—range of motion ...	Plantar flexion capability <5 degrees	D

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Disability test	Test result	Disability classification
Physical examination—range of motion ...	Plantar flexion contracture 20 degrees	D
X-ray: ankle—talonavicular joint	Talonavicular joint space 0 mm	0
Physical examination	Varus deformity ≤15 degrees	D
Achilles tendon rupture:		
Physical examination—range of motion ...	Plantar flexion capability <5 degrees	D
Physical examination—range of motion ...	Plantar flexion contracture 20 degrees	D
Arthritis, ankle:		
X-ray: ankle	0 mm	D
Physical examination—range of motion ...	Plantar flexion capability <5 degrees	D
Physical examination—range of motion ...	Plantar flexion contracture 20 degrees	D
Physical examination	Varus deformity ≤15 degrees	D
Hindfoot fracture:		
X-ray: foot	Calcaneal fracture with Boehler angle <95 degrees.	D
X-ray: foot	Subtalar fracture with Boehler angle <95 degrees.	D
Physical examination	Varus angulation ≤20 degrees (hindfoot) ...	D
Physical examination	Valgus angulation ≤20 degrees (hindfoot) ..	D
Rheumatoid arthritis, foot:		
X-ray: foot	Significant degeneration	D
Medical record review	Chronic flare—up with treatment	D

**BODY PART: ANKLE AND FOOT
JOB TITLE: SIGNALMAN**

Ankle fracture:		
X-ray: ankle	Displaced intra-articular fracture	D
Physical examination	Varus deformity ≤15 degrees	D
Physical examination—range of motion ...	Plantar flexion capability <5 degrees	D
Physical examination—range of motion ...	Plantar flexion contracture 20 degrees	D
Ankylosis, ankle:		
Physical examination—range of motion ...	Ankylosis in 20 degree or ≤ dorsiflexion ...	D
Physical examination—range of motion ...	Ankylosis in 20 degree plantar flexion	D
Physical examination—range of motion ...	Ankylosis in int or ext malrotation ≤15 degrees.	D
Physical examination—range of motion ...	Ankylosis in varus 10 or more degrees	D
Physical examination—range of motion ...	Ankylosis in valgus 10 or more degrees ...	D
Arthritis, subtalar joint (hindfoot):		
X-ray: ankle—subtalar joint	Subtalar joint space 0 mm	D
Physical examination—range of motion ...	Plantar flexion capability <5 degrees	D
Physical examination—range of motion ...	Plantar flexion contracture 20 degrees	D
Physical examination	Varus deformity ≤15 degrees	D
Arthritis, talonavicular joint (hindfoot):		
Physical examination—range of motion ...	Plantar flexion capability <5 degrees	D
Physical examination—range of motion ...	Plantar flexion contracture 20 degrees	D
X-ray: ankle—talonavicular joint	Talonavicular joint space 0 mm	D
Physical examination	Varus deformity ≤15 degrees	D
Achilles tendon rupture:		
Physical examination—range of motion ...	Plantar flexion capability <5 degrees	D
Physical examination—range of motion ...	Plantar flexion contracture 20 degrees	D
Arthritis, ankle:		
X-ray: ankle	0 mm	D
Physical examination—range of motion ...	Plantar flexion capability <5 degrees	D
Physical examination—range of motion ...	Plantar flexion contracture 20 degrees	D
Physical examination	Varus deformity ≤15 degrees	D
Hindfoot fracture:		
X-ray: foot	Calcaneal fracture with Boehler angle <95 degrees.	D
X-ray: foot	Subtalar fracture with Boehler angle <95 degrees.	D
Physical examination	Varus angulation ≤20 degrees (hindfoot) ...	D
Physical examination	Valgus angulation ≤20 degrees (hindfoot) ..	D
Rheumatoid arthritis, foot:		
X-ray: foot	Significant degeneration	D
Medical record review	Chronic flare-up with treatment	D

**BODY PART: ANKLE AND FOOT
JOB TITLE: TRACKMAN**

Ankle fracture:		
X-ray: ankle	Displaced intra-articular fracture	D
Physical examination—range of motion ...	Varus deformity ≤15 degrees	D
Physical examination—range of motion ...	Plantar flexion capability ≤5 degrees	D
Physical examination—range of motion ...	Plantar flexion contracture 20 degrees	D

Disability test	Test result	Disability classification
Ankylosis, ankle:		
Physical examination—range of motion ...	Ankylosis in 20 degree or ≤ dorsiflexion	D
Physical examination—range of motion ...	Ankylosis in 20 degree plantar flexion	D
Physical examination—range of motion ...	Ankylosis in int or ext malrotation ≤15 degrees.	D
Physical examination—range of motion ...	Ankylosis in varus 10 or more degrees	D
Physical examination—range of motion ...	Ankylosis in valgus 10 or more degrees	D
Arthritis, subtalar joint (hindfoot):		
X-ray: ankle—subtalar joint	Subtalar joint space 0 mm	D
Physical examination—range of motion ...	Plantar flexion capability <5 degrees	D
Physical examination—range of motion ...	Plantar flexion contracture 20 degrees	D
Physical examination	Varus deformity ≤15 degrees	D
Arthritis, talonavicular joint (hindfoot):		
Physical examination—range of motion ...	Plantar flexion capability <5 degrees	D
Physical examination—range of motion ...	Plantar flexion contracture 20 degrees	D
X-ray: angle—talonavicular joint	Talonavicular joint space 0 mm	D
Physical examination	Varus deformity ≤15 degrees	D
Achilles tendon rupture:		
Physical examination—range of motion ...	Plantar flexion capability <5 degrees	D
Physical examination—range of motion ...	Plantar flexion contracture 20 degrees	D
Arthritis, ankle:		
X-ray: ankle	0 mm	D
Physical examination—range of motion ...	Plantar flexion capability <5 degrees	D
Physical examination	Varus deformity ≤15 degrees	D
Hindfoot fracture:		
X-ray: foot	Calcaneal fracture with Boehler angle <95 degrees.	D
X-ray: foot	Subtalar fracture with Boehler angle <95 degrees.	D
Physical examination	Varus angulation ≤20 degrees (hindfoot) ...	D
Physical examination	Valgus angulation ≤20 degrees (hindfoot) ..	D
Rheumatoid arthritis, foot:		
X-ray: foot	Significant degeneration	D
Medical record review	Chronic flare-up with treatment	D

**BODY PART: ANKLE AND FOOT
JOB TITLE: MACHINIST**

Ankle fracture:		
X-ray: ankle	Displaced intra-articular fracture	D
Physical examination	Varus deformity ≤15 degrees	D
Physical examination—range of motion ...	Plantar flexion capability <5 degrees	D
Physical examination—range of motion ...	Plantar flexion contracture 20 degrees	D
Ankylosis, ankle:		
Physical examination—range of motion ...	Ankylosis in 20 degree or ≤ dorsiflexion	D
Physical examination—range of motion ...	Ankylosis in 20 degree plantar flexion	D
Physical examination—range of motion ...	Ankylosis in int or ext malrotation ≤15 degrees.	D
Physical examination—range of motion ...	Ankylosis in varus 10 or more degrees	D
Physical examination—range of motion ...	Ankylosis in valgus 10 or more degrees	D
Arthritis, subtalar joint (hindfoot):		
X-ray: ankle—subtalar joint	Subtalar joint space 0 mm	D
Physical examination—range of motion ...	Plantar flexion capability <5 degrees	D
Physical examination—range of motion ...	Plantar flexion contracture 20 degrees	D
Physical examination	Varus deformity ≤15 degrees	D
Arthritis, talonavicular joint (hindfoot):		
Physical examination—range of motion ...	Plantar flexion capability <5 degrees	D
Physical examination—range of motion ...	Plantar flexion contracture 20 degrees	D
X-ray: ankle—talonavicular joint	Talonavicular joint space 0 mm	D
Physical examination	Varus deformity ≤15 degrees	D
Achilles tendon rupture:		
Physical examination—range of motion ...	Plantar flexion capability <5 degrees	D
Physical examination—range of motion ...	Plantar flexion contracture 20 degrees	D
Arthritis, ankle:		
X-ray: ankle	0 mm	D
Physical examination—range of motion ...	Plantar flexion capability <5 degrees	D
Physical examination—range of motion ...	Plantar flexion contracture 20 degrees	D
Physical examination	Varus deformity ≤15 degrees	D
Hindfoot fracture:		
X-ray: foot	Calcaneal fracture with Boehler angle <95 degrees.	D
X-ray: foot	Subtalar fracture with Boehler angle <95 degrees.	D
Physical examination	Varus angulation ≤20 degrees (hindfoot) ...	D

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Disability test	Test result	Disability classification
Physical examination	Valgus angulation ≤20 degrees (hindfoot) ..	D
Rheumatoid arthritis, foot:		
X-ray: foot	Significant degeneration	D
Medical record review	Chronic flare-up with treatment	D
BODY PART: ANKLE AND FOOT		
JOB TITLE: SHOP LABORER		
Ankle fracture:		
X-ray: ankle	Displaced intra-articular fracture	D
Physical examination	Varus deformity ≤15 degrees	D
Physical examination—range of motion ...	Plantar flexion capability <5 degrees	D
Physical examination—range of motion ...	Plantar flexion contracture 20 degrees	D
Ankylosis, ankle:		
Physical examination—range of motion ...	Ankylosis in 20 degree or ≤ dorsiflexion ...	D
Physical examination—range of motion ...	Ankylosis in 20 degree plantar flexion	D
Physical examination—range of motion ...	Ankylosis in int or ext malrotation ≤15 de- grees.	D
Physical examination—range of motion ...	Ankylosis in varus 10 or more degrees	D
Physical examination—range of motion ...	Ankylosis in valgus 10 or more degrees ...	D
Arthritis, subtalar joint (hindfoot):		
X-ray: ankle—subtalar joint	Subtalar joint space 0 mm	D
Physical examination—range of motion ...	Plantar flexion capability <5 degrees	D
Physical examination—range of motion ...	Plantar flexion contracture 20 degrees	D
Physical examination	Varus deformity ≤15 degrees	D
Arthritis, talonavicular joint (hindfoot):		
Physical examination—range of motion ...	Plantar flexion capability <5 degrees	D
Physical examination—range of motion ...	Plantar flexion contracture 20 degrees	D
X-ray: ankle—talonavicular joint	Talonavicular joint space 0 mm	D
Physical examination	Varus deformity ≤15 degrees	D
Achilles tendon rupture:		
Physical examination—range of motion ...	Plantar flexion capability <5 degrees	D
Physical examination—range of motion ...	Plantar flexion contracture 20 degrees	D
Arthritis, ankle:		
X-ray: ankle	0 mm	D
Physical examination—range of motion ...	Plantar flexion capability <5 degrees	D
Physical examination—range of motion ...	Plantar flexion contracture 20 degrees	D
Physical examination	Varus deformity ≤15 degrees	D
Hindfoot fracture:		
X-ray: foot	Calcaneal fracture with Boehler angle <95 degrees.	D
X-ray: foot	Subtalar fracture with Boehler angle <95 degrees.	D
Physical examination	Varus angulation ≤20 degrees (hindfoot) ...	D
Physical examination	Valgus angulation ≤20 degrees (hindfoot) ..	D
Rheumatoid arthritis, foot:		
X-ray: foot	Significant degeneration	D
Medical record review	Chronic flare-up with treatment	D
Disability test	Test result	Disability classification
BODY PART: ANKLE AND FOOT		
JOB TITLE: SALES REPRESENTATIVES		
Achilles tendon rupture:		
Physical examination—range of motion ...	Plantar flexion capability <5 degrees	D
Physical examination—range of motion ...	Plantar flexion contracture 20 degrees	D
Arthritis, ankle:		
X-ray: ankle	0 mm	D
Physical examination—range of motion ...	Plantar flexion capability <5 degrees	D
Physical examination—range of motion ...	Plantar flexion contracture 20 degrees	D
Physical examination	Varus deformity ≤15 degrees	D
Hindfoot fracture:		
X-ray: foot	Calcaneal fracture with Boehler angle <95 degrees.	D
X-ray: foot	Subtalar fracture with Boehler angle <95 degrees.	D
Physical examination	Varus angulation ≤20 degrees (hindfoot) ...	D
Physical examination	Valgus angulation ≤20 degrees (hindfoot) ..	D
Rheumatoid arthritis, foot:		
X-ray: foot	Significant degeneration	D
Medical record review	Chronic flare-up with treatment	D

JOB INFORMATION FORMS

Form Approved
OMB No. 3220-0193



JOB INFORMATION FORM

RRB Claim Number
Employee's Name
Date Released
Regular Railroad Occupation*
Location
Date Last Worked

* The regular railroad occupation is: 1) the occupation in which the employee has been engaged for more calendar months than any other occupation during the last preceding 5 calendar years, whether consecutive or not; or 2) the occupation which the employee has been in service for not less than one-half of all months in which the employee has been engaged in service during the last 15 consecutive calendar years; or 3) if an employee last worked as an officer or employee of a railway labor organization and if that employment is no longer available, the regular occupation shall be the position to which the employee holds seniority rights or the position left to work for the railway labor organization.

The above-named railroad employee has applied for an occupational disability benefit under section 2(a)(iv) of the Railroad Retirement Act. Railroad Retirement Board (RRB) regulation 20 CFR 220.13 (b)(2) provides that railroad employers may furnish pertinent information concerning the job duties the employee is required to perform. If you wish to provide job duty information on the above-named employee, it must be received by the RRB no later than _____.

EMPLOYER INFORMATION

The attached list of job duties indicate those duties generally performed by the employee.

Please provide any additional information on the duties the employee performed over the last 5 years, or 15 years if appropriate.

This information can be entered in the Remarks section or attached to this form.

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Job information should be sent to:

U.S. RAILROAD RETIREMENT BOARD
844 NORTH RUSH STREET
CHICAGO, ILLINOIS 60611-2092
ATTENTION: DISABILITY PROGRAMS SECTION

or a facsimile may be sent to (312)751-7167.

Employer Certification - The information contained in this report is correct to the best of my knowledge and belief.	
NAME _____ (Please Print)	SIGNATURE _____
TITLE _____ (Please Print)	DATE ____ / ____ / ____
TELEPHONE NO (____) _____	
Remarks: 	

Paperwork Reduction Act Notice

Section 7 (b)(6) of the Railroad Retirement Act (RRA) allows the Railroad Retirement Board (RRB) to collect this information. While you are not required to respond, the information you provide will be used by the RRB in determining an applicant's eligibility for an occupational disability under the RRA.

We estimate that this form takes an average of 20 minutes per response to complete, including the time for reviewing the instructions, getting the needed data, and reviewing the completed form. *Federal agencies may not conduct or sponsor, and respondents are not required to respond to, a collection of information unless it displays a valid OMB number.* If you wish, send comments regarding the accuracy of our estimate or any other aspects of this form, including suggestions for reducing the completion time to: Chief of Information Management, Railroad Retirement Board, 844 North Rush Street, Chicago, IL 60611-2092 and to the Office of Management and Budget, Paperwork Reduction Project (3220-0193), Washington DC 20503. Please do not return this form to either of these addresses.

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JOB INFORMATION FORM

RRB Claim Number
Employee's Name
Date Released
Regular Railroad Occupation*
Location
Date Last Worked

* The regular railroad occupation is: 1) the occupation in which the employee has been engaged for more calendar months than any other occupation during the last preceding five calendar years, whether consecutive or not; or 2) the occupation which the employee has been in service for not less than one-half of all months in which the employee has been engaged in service during the last 15 consecutive calendar years; or 3) if an employee last worked as an officer or employee of a railway labor organization and if that employment is no longer available, the regular occupation shall be the position to which the employee holds seniority rights or the position left to work for the railway labor organization.

The above-named railroad employee has applied for an occupational disability benefit under section 2(a)(iv) of the Railroad Retirement Act. Railroad Retirement Board (RRB) regulation 20 CFR 220.13 (b)(2) provides that railroad employers may furnish pertinent information concerning the job duties the employee is required to perform. If you wish to provide job duty information on the above-named employee, it must be received by the RRB no later than _____.

EMPLOYER INFORMATION

You may wish to provide the RRB with job duty information. If so, the job information that is needed for a disability decision should include a full description of the basic duties to perform the occupation listed. For example, list the types of machinery, tools and/or equipment used, technical knowledge or skills involved, and number of people supervised. Also include the types of physical activities involved in a typical 8 hour work day, such as how many hours of walking, standing or sitting, what items are lifted and carried and how much these items weigh, and how often bending, crouching, kneeling, reaching and climbing are performed. If exposure to environmental hazards, such as working at heights or around dangerous machinery, in extreme temperatures or excessive noise are present, also list these.

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Railroad Retirement Board

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This information can be entered in the Remarks section or attached to this form.

Job information should be sent to:

U.S. RAILROAD RETIREMENT BOARD
844 NORTH RUSH STREET
CHICAGO, ILLINOIS 60611-2092
ATTENTION: DISABILITY PROGRAMS SECTION

or a facsimile may be sent to (312)751-7167.

Employer Certification - The information contained in this report is correct to the best of my knowledge and belief.	
NAME _____ (Please Print)	SIGNATURE _____
TITLE _____ (Please Print)	DATE ____/____/____
TELEPHONE NO (____) _____	
Remarks: 	

Paperwork Reduction Act Notice

Section 7 (b)(6) of the Railroad Retirement Act (RRA) allows the Railroad Retirement Board (RRB) to collect this information. While you are not required to respond, the information you provide will be used by the RRB in determining an applicant's eligibility for an occupational disability under the RRA.

We estimate that this form takes an average of 20 minutes per response to complete, including the time for reviewing the instructions, getting the needed data, and reviewing the completed form. *Federal agencies may not conduct or sponsor, and respondents are not required to respond to, a collection of information unless it displays a valid OMB number.* If you wish, send comments regarding the accuracy of our estimate or any other aspects of this form, including suggestions for reducing the completion time to: Chief of Information Management, Railroad Retirement Board, 844 North Rush Street, Chicago, IL 60611-2092 and to the Office of Management and Budget, Paperwork Reduction Project (3220-0193), Washington DC 20503. Please do not return this form to either of these addresses.

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[63 FR 7543, Feb. 13, 1998]

PART 221—JURISDICTION DETERMINATIONS

- Sec.
- 221.1 Introduction.
- 221.2 Railroad Retirement Board jurisdiction.
- 221.3 Social Security Administration jurisdiction.
- 221.4 When a jurisdiction decision may be reversed.

AUTHORITY: Sec. 7(b)(1), Pub. L. 94-547 (45 U.S.C. 231f(b)(1)).

SOURCE: 47 FR 7656, Feb. 22, 1982, unless otherwise noted.

§ 221.1 Introduction.

This part explains the factors involved in deciding whether the Social Security Administration or the Railroad Retirement Board will pay benefits to a railroad employee, and his or