DOCUMENT RESUME

ED 069 642 TM 002 067

TITLE	Mine-Machinery Mechanic (mining & quarrying) 620.281-078--Technical Report on Development of USTES Aptitude Test Battery.
INSTITUTION	Manpower Administration (DOL), Washington, D.C. U.S. Training and Employment Service.
REPORT NO	USTES-TR-S-455
PUB DATE	Aug 70
NOTE	22p.
EDRS PRICE	MF-$0.65 HC-$3.29
DESCRIPTORS	*Aptitude Tests; *Cutting Scores; Evaluation Criteria; Job Applicants; *Job Skills; *Machine Repairmen; Mechanics (Process); Norms; Occupational Guidance; *Personnel Evaluation; Test Reliability; Test Validity
IDENTIFIERS	GATB; *General Aptitude Test Battery

ABSTRACT

The United States Training and Employment Service General Aptitude Test Battery (GATB), first published in 1947, has been included in a continuing program of research to validate the tests against success in many different occupations. The GATB consists of 12 tests which measure nine aptitudes: General Learning Ability; Verbal Aptitude; Numerical Aptitude; Spatial Aptitude; Form Perception; Clerical Perception; Motor Coordination; Finger Dexterity; and Manual Dexterity. The aptitude scores are standard scores with 100 as the average for the general working population, and a standard deviation of 20. Occupational norms are established in terms of minimum qualifying scores for each of the significant aptitude measures which, when combined, predict job performance. Cutting scores are set only for those aptitudes which aid in predicting the performance of the job duties of the experimental sample. The GATB norms described are appropriate only for jobs with content similar to that shown in the job description presented in this report. A description of the validation sample and a personnel evaluation form are also included. (AG)

S-455

August 1970

U.S. Training and
Employment Service
Technical Report
S-455

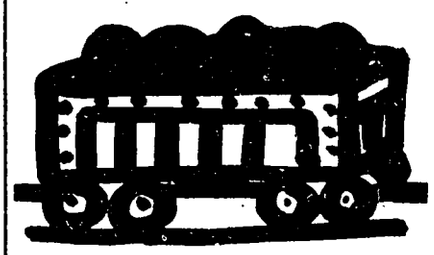
Development of USTES

APTITUDE TEST
BATTERY FOR

MINE-MACHINERY MECHANIC

(mining & quarrying)
620.281

U.S. DEPARTMENT OF LABOR
Manpower Administration



Technical Report on Development of USTES Aptitude Test Battery

For . . . . . .

Mine Machinery Mechanic (mining and quarrying) 620.281-078

S-455

(Developed in Cooperation with Virginia and West Virginia
State Employment Services)

U.S. Department of Labor
Manpower Administration

August 1970

FOREWORD

The United States Training and Employment Service General Aptitude Test Battery (GATB) was first published in 1947. Since that time the GATB has been included in a continuing program of research to validate the tests against success in many different occupations. Because of its extensive research base the GATB has come to be recognized as the best validated multiple aptitude test battery in existence for use in vocational guidance.

The GATB consists of 12 tests which measure 9 aptitudes: General Learning Ability, Verbal Aptitude, Numerical Aptitude, Spatial Aptitude, Form Perception, Clerical Perception, Motor Coordination, Finger Dexterity, and Manual Dexterity. The aptitude scores are standard scores with 100 as the average for the general working population, with a standard deviation of 20.

Occupational norms are established in terms of minimum qualifying scores for each of the significant aptitude measures which, in combination, predict job performance. For any given occupation, cutting scores are set only for those aptitudes which contribute to the prediction of performance of the job duties of the experimental sample. It is important to recognize that another job might have the same job title but the job content might not be similar. The GATB norms described in this report are appropriate for use only for jobs with content similar to that shown in the job description included in this report.

GATB Study #2733

Development of USTES Aptitude Test Battery

For

Mine Machinery Mechanic (mining and quarrying) 620.281-078

S-455

This report describes research undertaken for the purpose of developing General Aptitude Test Battery (GATB) norms for the occupation of Mine Machinery Mechanic (mining and quarrying) 620.281-078. The following norms were established.

GATB Aptitudes	Minimum Acceptable GATB Scores
S - Spatial Aptitude	70
Q - Clerical Perception	90
M - Manual Dexterity	80

Research Summary

Sample:

61 male trainees, 2 MDTA projects (42 weeks in length) at the Wise County Vocational-Technical School, Wise, Virginia. Each project consisted of two sections. (See Appendix for outline of course).

All trainees in the sample were nonminority group individuals.

Criterion:

A multiple hurdle consisting of Weighted Weekly Grade Average (r_1) and instructor's ratings (r_2).

Design:

Longitudinal -- All trainees tested prior to entrance in course.

Minimum aptitude requirements were determined on the basis of a job analysis and statistical analyses of aptitude mean scores, standard deviations, aptitude-criterion correlations, and selective efficiencies.

Predictive Validity:

Phi Coefficient (ϕ) = .32 ($P/2 < .01$)

Effectiveness of Norms:

Only 69% of the nontest-selected trainees in the sample used for this study were good trainees; if the trainees had been test-selected with the above norms, 84% would have been good trainees. Thirty-one percent of the nontest-selected trainees used for this study were poor trainees; if the trainees had been test-selected with the above norms, only 16% would have been poor trainees. The effectiveness of the norms is shown graphically in Table 1:

TABLE 1

Effectiveness of Norms

	Without Tests	With Tests
Good Trainees	69%	84%
Poor Trainees	31%	16%

Sample Description

Size:

N = 61

Occupational Status:

MDTA Trainees

Selection Requirements:

Education: Min. 6th grade or equivalent

Previous Experience: None

Tests: None

Other: Selection was based upon interview, work history, interest and estimated ability. Must pass physical examination.

TABLE 2

Means, Standard Deviations (SD), Ranges and Pearson Product-Moment Correlationswith Weighted Weekly Grade Average Criterion (r_1) and Instructors Rating Criterion (r_2) for Age and Education.

	Mean	SD	Range	r_1	r_2
Age (years)	29.4	7.2	21-51	.009	.222
Education (years)	9.9	2.4	4-15	.210	.352**

**Significant at the .01 level

EXPERIMENTAL TEST BATTERY

All twelve tests of the GATB, **B-1002A** were administered to the sample during the period September 1967 and November 1968.

CRITERION

The following criterion measures were obtained: (1) Combined weekly grade average (WGA) for all subjects regardless of total number of hours attended, converted to standard scores; (2) SP-21T Descriptive Rating Scale at the end of the course for each trainee enrolled for at least three weeks, converted to standard scores (See Appendix); and (3) Weekly grade average (1 above) weighted according to total hours required for each of the four sections. (Some variation in hours for sections due to inclement weather). The two sections taught by each of the two instructors were then combined and converted to standard scores. The correlations between each of these criteria are shown below:

	WGA	WWGA
SP-21T	.716	.610
WWGA	.753	-

A multiple-hurdle criterion consisting of the weighted weekly grade average and the SP-21T was selected as the final criterion.

Criterion Distribution:	WWGA	SP-21T
Actual Range:	48-131	56-156

(These ranges are based on standard scores with Mean = 100 and SD = 20.)

Criterion Dichotomy:

The criterion was dichotomized into high and low groups by placing 31% of the sample in the low group to correspond with the percentage of trainees considered unsatisfactory or marginal. Trainees in the high criterion group were designated as "good **trainees** " and those in the low criterion group as "poor **trainees**". The critical score of 80 for the weighted weekly grade average failed 20%. The criterion critical score of 83 for the SP-21T failed 15% of the trainees.

APTITUDES CONSIDERED FOR INCLUSION IN THE NORMS

Aptitudes were considered for tryout in the norms on the basis of a qualitative analysis of the job and course summaries and a statistical analysis of test and criterion data. **Aptitude G which does not have a significant correlation with either of the criteria was considered for inclusion in the trial norms since the qualitative analysis indicated it might be important for the job duties and the sample had a relatively low standard deviation on this aptitude. Tables 3, 4 and 5 show the results of the qualitative and statistical analyses.**

TABLE 3

Based on course analysis and job description the following aptitudes appear to be important for successful completion of the curriculum.

Aptitude	Rationale
G - General Learning Ability	Ability to understand, learn, and apply technical procedures to a variety of situations involving the repair and maintenance of mining machinery.
S - Spatial Aptitude	Read blueprints and specifications; ability to repair mechanical equipment in accordance with detailed drawings and electrical schematics.
P - Form Perception	Ability to examine parts for imperfections or changes in dimensional requirements.
M - Manual Dexterity	Ability to dismantle and assemble various machinery and electrical units. Use hand tools, lubricate machinery and operate metal-working tools such as lathes.

TABLE 4

Means, Standard Deviations (SD), Ranges and Pearson Product-Moment Correlations with the Criteria of Average WWGA (r_1) and SP-21T (r_2) for the Aptitudes, for the GATB.

Aptitude	Mean	SD	Range	r_1	r_2
G - General Learning Ability	95.8	14.1	67-125	.175	.240
V - Verbal Aptitude	92.6	13.1	61-104	.048	.190
N - Numerical Aptitude	96.0	17.5	55-130	.155	.129
S - Spatial Aptitude	97.6	17.1	58-130	.163	.271*
P - Form Perception	103.0	18.7	49-151	.001	.224*
Q - Clerical Perception	96.8	14.9	63-162	.085	.266*
K - Motor Coordination	103.6	21.2	51-179	.103	.102
F - Finger Dexterity	97.4	18.7	66-149	.044	.287*
M - Manual Dexterity	111.3	24.0	60-163	.105	.252*

*Significant at the .05 level

TABLE 5

SUMMARY OF QUALITATIVE AND QUANTITATIVE DATA

Type of Evidence	Aptitudes								
	G	V	N	S	P	Q	K	F	M
Job Analysis Data: Important	X			X	X				X
Irrelevant									
Relatively High Mean					X		X		X
Relatively Low Standard Deviation	X	X				X			
Significant Correlation Criterion I Criterion II				X	X	X		X	X
Aptitudes to be Considered for Trial Norms	G			S	P	Q		F	M

DERIVATION AND VALIDITY OF NORMS

Final norms were derived on the basis of a comparison of the degree to which trial norms consisting of various combinations of Aptitudes G, S, P, Q, F and M as trial cutting scores were able to differentiate between the 69% of the sample considered good trainees and the 31% of the sample considered poor trainees. Trial cutting scores at five point intervals one standard deviation below the mean are tried because this will eliminate about one-third of the sample with three-aptitude norms. For two-aptitude norms, minimum cutting scores of slightly higher than one standard deviation below the mean will eliminate about one-third of the sample; for four-aptitude trial norms, cutting scores of slightly lower than one standard deviation below the mean will eliminate about one-third of the sample. The phi coefficient was used as a basis for comparing trial norms. Norms of S-70, Q-90 and M-80 provided the highest degree of differentiation for the occupation of Mine Machinery Mechanic (mining and quarrying) 620.281-078. These norms are shown in Table 6 and are indicated by a phi coefficient of .32 (statistically significant at the .01 level.)

TABLE 6

Predictive Validity of Test Norms S-70,Q-90 and M-80

	Nonqualifying Test Scores	Qualifying Test Scores	Total
Good Trainees	11	31	42
Poor Trainees	13	6	19
Total	24	37	61

Phi Coefficient (ϕ) = .32 Chi Square (X^2_y) = 8.1
Significant Level = $P/2 < .01$

DETERMINATION OF OCCUPATIONAL APTITUDE PATTERN

The data for this study did not meet the requirements for incorporating the occupation studied into any of the OAP's included in Section II of the 1970 edition of the Manual for the General Aptitude Test Battery. The data for this sample will be considered for future groupings of occupations in the development of new occupational aptitude patterns.

RESEARCH SUMMARY

Check Study #1 GATB Study #2733-A

Mine Machinery Mechanic (mining and quarrying) 620.281-078

Sample:

32 male Mine Machinery Mechanics employed at various mines in Virginia and West Virginia.

TABLE 7

Means, Standard Deviations (SD), Ranges and Pearson Product-Moment Correlations with the Criterion (r) for Age, Education, Experience and Aptitudes of the GATB

Age (years)	37.5	10.1	21-56	.063
Education (years)	9.7	1.9	6-14	.043
Experience (months)	80.3	105.6	4-420	.060
G - General Learning Ability	90.5	14.6	70-133	.204
V - Verbal Aptitude	89.1	13.4	70-129	.208
N - Numerical Aptitude	92.1	18.5	60-138	.158
S - Spatial Aptitude	92.0	18.2	68-133	.122
P - Form Perception	91.9	18.6	65-147	.258
Q - Clerical Perception	97.0	16.4	76-143	.140
K - Motor Coordination	97.0	19.5	68-138	.362*
F - Finger Dexterity	89.9	20.9	41-133	.398*
M - Manual Dexterity	101.1	25.5	46-181	.504**

*Significant at the .05 level

**Significant at the .01 level

Criterion:

Supervisory rating (one SP-21 Descriptive Rating Scale, see Appendix)

Design:

Concurrent (tests were administered at various times from 1965-1969 and criterion data were collected during 1969.)

Principal Activities:

The job duties are shown in the job description in the Appendix and are comparable to the course content and duties of the validation study.

Concurrent Validity:

Phi coefficient (ϕ) = .36 (P/2 .025)

Effectiveness of Norms:

Only 69% of the nontest-selected workers in this sample were good workers; if the workers had been test-selected with S-455 norms, 94% would have been good workers. 31% of the nontest-selected workers in this sample were poor workers. If the workers had been test-selected with the S-455 norms, only 6% would have been poor workers. The effectiveness of the norms when applied to this independent sample is shown graphically in Table 8:

TABLE 8

EFFECTIVENESS OF S-455 NORMS ON CHECK STUDY SAMPLE #1

	Without Tests	With Tests
Good Workers	69%	94%
Poor Workers	31%	6%

TABLE 9

CONCURRENT VALIDITY OF TEST NORMS OF S-70, Q-90 and M-80

	Nonqualifying Test Scores	Qualifying Test Scores	Total
Good Workers	9	15	24
Poor Workers	7	1	8
Total	16	16	32

Phi Coefficient (ϕ) = .36 Chi Square (X^2_y) = 4.2
Significance Level = P/2 < .025

A-P-P-E-N-D-I-X

(Mine Machinery Mechanic) Wise County Vocational-Technical School, Wise, Va.

COURSE CONTENT

Major Units	Clock Hrs.*
I. Orientation	12
II. Hydraulics A. Introduction B. Liquid Flow C. Pressure Gauges and Volume Meters D. Pipes - Fittings - Seals E. Controls F. Pumps G. Motors H. Hydraulic Liquids I. Hydra - Jacks - Jacks and Clutches J. Hose and Fittings K. Instruments L. Inspection	540
III. Industrial Electricity A. Electricity B. Blueprint Reading and Sketching C. D. C. Generators D D. C. Motors E. D. C. Controls F. A. C. Generators G. A. C. Motors H. A. C. Controls I. Transformers J. Electrical Equipment Testing	540
IV. Lubrication	50
V. Welding A. Metallic Arc Welding 1 - Arc Welding Fundamentals 2 - Horizontal Position 3 - Vertical Position 4 - Overhead Position B. Oxyacetylene Welding 1 - Gas Welding Fundamentals 2 - Flat Position Welding 3 - Other Welding Positions and Operations 4 - Miscellaneous Oxyacetylene Welding and Cutting Jobs	110

VI. Mechanics 264

A. Bench Work
- 1 - Layout Work
- 2 - Hacksaw Work
- 3 - Filing and Polishing
- 4 - Use of Tapes and Dies
- 5 - Inspection Practice

B. Drilling
- 1 - Orientation to Drill Press Work
- 2 - Layout for Drilling
- 3 - Center Drilling and Countersink Work
- 4 - Drilling
- 5 - Reaming

C. Safety

D. Outside Machine Work
- 1 - Gears
- 2 - Bearings
- 3 - Shafts, Sprockets and Chains

VII. Mining Safety 80

VIII. Occupational Information and Human Relations 20
- A - Job Entry Requirement
- B - Occupational Trends
- C - Self Evaluation

TOTAL HOURS 1616

*Some variation in total hours in individual sections due to inclement weather.

Length of Course - 42 Weeks

VALIDATION STUDY

SP-21T

UNITED STATES EMPLOYMENT SERVICE

DESCRIPTIVE RATING SCALE FOR TRAINEES

(For Trainees Used in Aptitude Test Development Studies)

Score_____

RATING SCALE FOR_____
(DOT Title and Code for Training Course)

Directions: Please read "the suggestions to raters" on the back of this form then complete this rating scale. In making your ratings, only one box should be checked for each question.

Name of trainee (print)_____
(Last) (First)

Sex: Male_____ Female_____

A. How much aptitude or facility does he have for the vocational training? (Trainee's adeptness or knack for performing the work easily and well.)

☐ 1. Has great difficulty doing the work. Not at all suited for the training.

☐ 2. Usually has some difficulty doing the work. Not too well suited for the training.

☐ 3. Does the work without too much difficulty. Fairly well suited for the training.

☐ 4. Usually does the work without difficulty. Well suited for the training.

☐ 5. Does the work with great ease. Exceptionally well suited for the training.

B. How much ability does he have for maintaining adequate production in the vocational activity for which he was trained?

- ☐ 1. Capable of very low work output. Can perform only at an unsatisfactory pace.
- ☐ 2. Capable of low work output. Can perform at a slow pace.
- ☐ 3. Capable of fair work output. Can perform at an acceptable but not a fast pace.
- ☐ 4. Capable of high work output. Can perform at a fast pace.
- ☐ 5. Capable of very high work output. Can perform at an unusually fast pace.

C. How good was the quality of his work during the vocational training?

- ☐ 1. Performance was inferior and almost never met minimum quality standards.
- ☐ 2. Performance was usually acceptable but somewhat inferior in quality. The grade of his work could stand improvement.
- ☐ 3. Performance was acceptable but usually not superior in quality.
- ☐ 4. Performance was usually superior in quality.
- ☐ 5. Performance was almost always of the highest quality.

D. How quickly did he learn the instructional units of the vocational training?

- ☐ 1. Learned the work very slowly. Needed careful and repeated instructions.
- ☐ 2. Learned the work somewhat slower than most.
- ☐ 3. Learned most of the work in the usual amount of time.
- ☐ 4. Learned most of the work quickly.
- ☐ 5. Learned all of the work very rapidly. Needed only the minimum amount of training or instructions for even the difficult aspects.

E How much ability does he have for using the equipment of the vocational training?

- ☐ 1. Has very limited ability. Cannot use the equipment adequately.
- ☐ 2. Has little ability. Can use the equipment to "get by."
- ☐ 3. Has a moderate amount of ability. Can use the equipment to do fair work.
- ☐ 4. Has high ability. Can use the equipment to do good work.
- ☐ 5. Has very high ability. Can use the equipment to do excellent work.

F. How large a variety of job duties can he perform efficiently?

- ☐ 1. Cannot perform different operations adequately.
- ☐ 2. Can perform a limited number of different operations efficiently.
- ☐ 3. Can perform several different operations with reasonable efficiency.
- ☐ 4. Can perform many different operations efficiently.
- ☐ 5. Can perform an unusually large variety of different operations efficiently.

G. Considering all the factors already rated, and *only* these factors, how acceptable was his performance during vocational training?

- ☐ 1. Performance was unsatisfactory.
- ☐ 2. Performance was not completely satisfactory.
- ☐ 3. Performance was satisfactory.
- ☐ 4. Performance was good.
- ☐ 5. Performance was outstanding.

SP-21
Rev. 2/61

Check Study

DESCRIPTIVE RATING SCALE
(For Aptitude Test Development Studies)

Score____

RATING SCALE FOR _____
D. O. T. Title and Code

Directions: Please read Form SP-20, "Suggestions to Raters", and then fill in the items listed below. In making your ratings, only one box should be checked for each question.

Name of Worker (print) _____
(Last) (First)

Sex: Male_____ Female_____

Company Job Title: _____

How often do you see this worker in a work situation?

☐ See him at work all the time.

☐ See him at work several times a day.

☐ See him at work several times a week.

☐ Seldom see him in work situation.

How long have you worked with him?

☐ Under one month.

☐ One to two months.

☐ Three to five months.

☐ Six months or more.

A. How much work can he get done? (Worker's ability to make efficient use of his time and to work at high speed.)

- ☐ 1. Capable of very low work output. Can perform only at an unsatisfactory pace.
- ☐ 2. Capable of low work output. Can perform at a slow pace.
- ☐ 3. Capable of fair work output. Can perform at an acceptable but not a fast pace.
- ☐ 4. Capable of high work output. Can perform at a fast pace.
- ☐ 5. Capable of very high work output. Can perform at an unusually fast pace.

B. How good is the quality of his work? (Worker's ability to do high-grade work which meets quality standards.)

- ☐ 1. Performance is inferior and almost never meets minimum quality standards.
- ☐ 2. The grade of his work could stand improvement. Performance is usually acceptable but somewhat inferior in quality.
- ☐ 3. Performance is acceptable but usually not superior in quality.
- ☐ 4. Performance is usually superior in quality.
- ☐ 5. Performance is almost always of the highest quality.

C. How accurate is he in his work? (Worker's ability to avoid making mistakes.)

- ☐ 1. Makes very many mistakes. Work needs constant checking.
- ☐ 2. Makes frequent mistakes. Work needs more checking than is desirable.
- ☐ 3. Makes mistakes occasionally. Work needs only normal checking.
- ☐ 4. Makes few mistakes. Work seldom needs checking.
- ☐ 5. Rarely makes a mistake. Work almost never needs checking.

D. How much does he know about his job? (Worker's understanding of the principles, equipment, materials and methods that have to do directly or indirectly with his work.)

☐ 1. Has very limited knowledge. Does not know enough to do his job adequately.

☐ 2. Has little knowledge. Knows enough to "get by."

☐ 3. Has moderate amount of knowledge. Knows enough to do fair work.

☐ 4. Has broad knowledge. Knows enough to do good work.

☐ 5. Has complete knowledge. Knows his job thoroughly.

E. How much aptitude or facility does he have for this kind of work? (Worker's adeptness or knack for performing his job easily and well.)

☐ 1. Has great difficulty doing his job. Not at all suited to this kind of work.

☐ 2. Usually has some difficulty doing his job. Not too well suited to this kind of work.

☐ 3. Does his job without too much difficulty. Fairly well suited to this kind of work.

☐ 4. Usually does his job without difficulty. Well suited to this kind of work.

☐ 5. Does his job with great ease. Exceptionally well suited for this kind of work.

F. How large a variety of job duties can he perform efficiently? (Worker's ability to handle several different operations in his work.)

☐ 1. Cannot perform different operations adequately.

☐ 2. Can perform a limited number of different operations efficiently.

☐ 3. Can perform several different operations with reasonable efficiency.

☐ 4. Can perform many different operations efficiently.

☐ 5. Can perform an unusually large variety of different operations efficiently.

G. How resourceful is he when something different comes up or something out of the ordinary occurs? (Worker's ability to apply what he already knows to a new situation.)

☐ 1. Almost never is able to figure out what to do. Needs help on even minor problems.

☐ 2. Often has difficulty handling new situations. Needs help on all but simple problems.

☐ 3. Sometimes knows what to do, sometimes doesn't. Can deal with problems that are not too complex.

☐ 4. Usually able to handle new situations. Needs help on only complex problems.

☐ 5. Practically always figures out what to do himself. Rarely needs help, even on complex problems.

H. How many practical suggestions does he make for doing things in better ways? (Worker's ability to improve work methods.)

☐ 1. Sticks strictly with the routine. Contributes nothing in the way of practical suggestions.

☐ 2. Slow to see new ways to improve methods. Contributes few practical suggestions.

☐ 3. Neither quick nor slow to see new ways to improve methods. Contributes some practical suggestions.

☐ 4. Quick to see new ways to improve methods. Contributes more than his share of practical suggestions.

☐ 5. Extremely alert to see new ways to improve methods. Contributes an unusually large number of practical suggestions.

I. Considering all the factors already rated, and only these factors, how acceptable is his work? (Worker's "all-around" ability to do his job.)

☐ 1. Would be better off without him. Performance usually not acceptable.

☐ 2. Of limited value to the organization. Performance somewhat inferior.

☐ 3. A fairly proficient worker. Performance generally acceptable.

☐ 4. A valuable worker. Performance usually superior.

☐ 5. An unusually competent worker. Performance almost always top notch.

FACT SHEET

Job Title: Mine Machinery Mechanic (mining and quarrying) 620.281-078

Job Summary: Repairs, adjusts and maintains mining machinery and equipment in accordance with manufacturers maintenance and repair manuals, blueprints, wiring diagrams and sketches at the working face, motor pit or in the maintenance shop.

Work Performed:

Repairs and maintains mine machinery and equipment: Makes diagnosis of cause of malfunction by visual inspection, listening, and electronic test equipment. Determines whether machine can be repaired at working face or whether it must be moved to motor pit or the maintenance shop. Dismantles machinery to gain access to remove, repair and/or replace defective parts of the hydraulic, mechanical and electrical components using hydraulic jacks, hoists, haul and power tools. Inspects parts for changes in dimensional requirements using rules, gauges, calipers, micrometers and other measuring devices. Uses oxy-acetylene and arc welders to remove, fabricate, repair and replace damaged metal sections of machinery and equipment. Cleans, lubricates and performs preventative maintenance in accordance with the manufacturer's maintenance and repair manuals. Repairs electrical systems of machinery and equipment such as contactor points, control panel switches and wiring in accordance with wiring diagrams. Installs wiring and other mine equipment such as conveyor belt lines following blueprints and sketches. May set-up and operate lathes, drillpresses, punch presses, grinders and other metal-working tools to make or repair parts. Works in repair shop and underground in mine. Conforms to state and federal laws with regard to job safety in the mine.

Effectiveness of Norms:

Only 69% of the nontest-selected trainees used for this study were good trainees; if the trainees had been test-selected with the S-455 norms, 84% would have been good trainees. 31% of the nontest-selected trainees used for this study were poor trainees; if the trainees had been test-selected with the S-455 norms, only 16% would have been poor trainees. (Validation Study)

Only 69% of the nontest-selected workers in the Check Study were good workers; if they had been test-selected with the S-455 norms, 94% would have been good workers. 31% of the nontest-selected workers in the Check Study were poor workers; if they had been test selected with the S-455 norms, only 6% would have been poor workers.

Applicability of S-455 Norms:

The aptitude test battery is applicable to jobs which include a majority of the job duties described above.

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