

## **CHAPTER V**

### **UNIT II: BHARAT ALUMINIUM CO. Ltd., NEW DELHI**

#### **Selection procedure of Engineering Graduate Apprentices:**

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**UNIT - II: BHARAT ALUMINIUM COMPANY Ltd., NEW DELHI****SELECTION PROCEDURE OF ENGINEERING GRADUATE APPRENTICES:**

This study describes the selection procedure of Engineering Graduate Apprentices for the Bharat Aluminium Co. Ltd., New Delhi (A Government of India undertaking.).

**A. The Applicants:**

All the applicants were fresh Engineering Graduates in different branches and were within the age range of 21-30 years. After preliminary screening on the basis of their merit in their final examination, altogether 1750 candidates were called for written test at various centres throughout India. Out of 1750 candidates, 1250 appeared at the written test.

**B. The methods used for selection:**

To select the suitable candidates out of the applicants the following procedure was adopted:

- i) A suitable objective test battery was constructed and used in the selection programme
- ii) Those who scored above the cutting point in composite test score, were called for Group Task, which provides, a more or less objective assessment of several personality traits through observation during performance of the specified task and ratings made on the basis of

individual interaction by trained raters.

iii) Further screening was made on the basis of group task grade and the successful candidates were called for interview.

iv) Final selection, however, was based on aptitude test score, group task rating and interview performances.

C. Description of the test used in selection:

By analysing the nature of the training course, later job requirement and the educational back-ground of the candidates it was decided to set up a selection test battery with the following tests tried out earlier in different context.

Test	No. of items	Time
1. Verbal Reasoning	30	20 minutes
2. Writing Ability:		
a) Organisation of ideas	18	15 minutes
b) Editing Exercise	30	15 minutes
3. Quantitative Reasoning and Data Interpretation	30	40 minutes
4. Abstract Reasoning	49	30 minutes
5. Surface Development	30	30 minutes

A brief description of these tests are presented below:

1. Verbal Reasoning: (V.R.)

This test was designed to measure different aspects of one's verbal reasoning and comprehension. The presence of this, helps one to tackle a given problem in a more rational and analytical way.

2. Writing Ability: (W.A.)

This test consisted of two sections viz.,

- (a) Organisation of Ideas, and
- (b) Editing Exercise.

These parts measure the candidates' ability to express correct and effective English, to understand the central idea from a set of sentences etc.

3. Quantitative Reasoning and Data Interpretation: (Q.R.&D.I)

It measured the ability of the candidates' to deal with numbers and to reason in terms of numbers. Information was presented in graphical and tabular forms and the candidates were required to draw relevant conclusion from these.

4. Abstract Reasoning: (A.R.)

This test involved a set of figures, which were arranged according to some rule which the candidates were to understand and to supply the next missing figure. This involved reasoning in abstract level.

### 5. Surface Development: (S.D.)

This test was designed to measure the candidate's ability to identify different surfaces of a solid figure presented in a cut out and stretched in a two dimensional plane. Candidates were to identify how the solid surface was to be developed out of the sketch presented in a two dimensional plane.

Out of 1299 candidates, who were called for written test, only 112 candidates were qualified for the group task. A brief description of the group task is presented here.

### D. Description of the Group Task:

Here a group consisted of a maximum of ten individuals. The task given to each group was designed in such a way so that each member of the group had to participate jointly and enough interaction among them was needed for completing the task successfully. During this period three trained raters observed the interaction and rated them on the following personality traits.

- i) Ability to follow directions
- ii) Cooperativeness
- iii) Ability to plan
- iv) Application
- v) Leadership

For each personality trait, five graded descriptive statements were given and for each trait the raters had to indicate which one of the five statements best described the individual. Each rater gave his or her ratings independently and the average of the ratings was used as the final assessment. Total time for this exercise was two hours per group.

#### 3. Administration and Scoring:

The score of each candidate (which was usually the total number of items correctly answered) was first corrected for guessing and then it was converted to standard score (which in this case was stanine grade). The standardized grades for different parts were added to get a composite grade which was used for selection.

Similarly the group task average ratings were first converted into stanine grades which were used for selection.

#### Analysis of Test Score:

The mean scores and standard deviations for each of the tests and the intercorrelations among the tests were computed and the values are presented in Tables 1 and 2.

Table: 1 : Showing the means and standard deviations etc., of the different parts of the Aptitude Test.

Tests	Mean	S.D.	Maximum possible score
1. Verbal Reasoning	14.18	3.45	30
2. Writing Ability	20.05	4.85	40
3. Quantitative Reasoning and Data Interpretation	18.09	5.28	30
4. Abstract Reasoning	21.72	5.28	40
5. Surface Development	17.87	3.97	30

Table: 2 : Showing the intercorrelation among the parts of the Aptitude test used in the Selection.

Tests	V.R.	W.A.	Q.R.&D.I	A.R.	S.D.
1. Verbal Reasoning		.56	.24	.31	.40
2. Writing Ability			.37	.34	.41
3. Quantitative Reasoning and Data Interpretation				.40	.31
4. Abstract Reasoning					.41
5. Surface Development					

The figures presented in Table-1 show that the tests were not difficult for the group in question. Moreover, the intercorrelations among the tests were not very high which indicated that the tests measured different dimensions of ability of the candidates. In order to find out the quality of the items included in the test,

- i. Difficulty value and
- ii. Discrimination index for the items were computed.

The difficulty value indicates the suitability of the item to the group in question and discriminating index indicates how far the item is able to discriminate the good candidates from the poor ones. The frequency distributions of the difficulty and discrimination values are presented in Table-3.

The figures presented in Table-3 show that except for Writing Ability and Abstract Reasoning parts, the items included in other parts were quite suitable for the group in question and most of the items had good discrimination power. Table-3 is drawn in the next page.



Table: 3 : Showing the distributions of items difficulty and discrimination.

Test Index Intervals	V.R.		J.A.		Q.R.&D.I.		A.R.		S.D.	
	Dif.	Disc.	Dif.	Disc.	Dif.	Disc.	Dif.	Disc.	Dif.	Disc.
1-10	1	4	3	2	1		6	1		
11-20	1	3	17	3	3		15	2	5	2
21-30	5	11	3	12	14	3	10	7	10	3
31-40	5	4	5	10	6	6	5	4	14	13
41-50	7	2	10	11		7	4	11	1	3
51-60	3	1	3	7		3	5	11		3
61-70	2			2		5	3	5		2
71-80	2					4		2		1
81-90	1									
91-100						1				

F. Validity of the Selection Procedure:

Twenty six candidates were ultimately selected in the year 1973 and after one year, an assessment was obtained regarding the job performance at the BALCO. The supervisors rated these selected candidates on the following five traits viz.,

- i) Following Direction
- ii) Cooperativeness
- iii) Ability to plan
- iv) Application and
- v) Leadership.

These ratings were correlated with the score on different parts of the aptitude tests and also with the ratings given in Group-Task. These correlations are presented in Tables 4 and 5.

Table: 4 : Showing the rank order correlations between the aptitude test scores, university marks and the total job performance ratings (N = 25)

V.R.	S.A.	Q.R. & D.I.	A.R.	S.D.	University marks
.08	.11	.20	.10	.57*	.25

\* indicate significant at the 1% level.

From the figures presented in Table-4, it follows that ~~the~~ so far as this group is concerned only surface development part was significantly related with the total of the job performance ratings. CR and DI was only fairly related with this criterion while the relationship was insignificant with other three parts viz., VR, VA, and AR. With the University marks of the selected candidates, however, the obtained correlation was .25.

Table: 5 : Showing the rank order correlations between Group Task ratings and the ratings given by the supervisors on the same traits with respect to the job performance. (N = 25)

Group Task	Follow- ing Di- rection	Coope- rative ness	Abili- ty to plan	Appli- cation	Lea- der ship	Total
Following Directions	.54*	.25	.34	.23	.30	.47**
Cooperativeness	.19	.17	.37	.29	.26	.24
Ability to plan	.16	.04	.22	.30	.27	.21
Application	.36	.03	.45**	.04	.07	.11
Leadership	.04	.36	.29	.11	.11	.21
Total	.34	.01	.20	.20	.13	.25

\* indicate significant at the 1% level

\*\* indicate significant at the 5% level

From the figures presented in Table-5 it follows that maximum correlation observed was between ratings on Following Directions. The next highest correlation observed was between Ability to plan and Application. Only traits like Leadership and Co-operativeness were not related with any one of the ratings given by the supervisors.

Summarising the results presented here it can be said that both Aptitude score and Group Task rating were significantly related with ratings secured by the candidates on the basis of their performance in the job and the least is said about the contribution of university marks towards job success is better. Ofcourse, this can be much improved by revising the already existing tests and adding some new ones, because the result obtained was on the basis of first year's selection only. But at the same time it should be remembered that these selection test variables were more closely related with job performance than the university marks, and if the interview marks be available we can compare its predictive efficiency with those of the Aptitude Scores and Group Task ratings.