

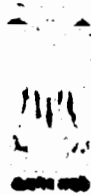
**PUBLIC ACCOUNTS COMMITTEE
1971-72**

(FIFTH LOK SABHA)

THIRD REPORT

Exploratory Tubewells Organisation

[Paragraph 36 of Audit Report (Civil), 1970]



**LOK SABHA SECRETARIAT
NEW DELHI**

July 1971/Asadha, 1893 (Saka)

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CORRIGENDA TO THIRD REPORT OF P.A.C. (1971-72)
PRESENTED TO LOK SABHA ON 13.7.1971.

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22	5.5	12	adequate	adequately
35	7.4	4	mabhinery	machinery
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68	7	3	acquires	aquifers
71	15	11	an efficient footing	on an effi- cient footing
76	29	3	earlier	before the rigs had been received in India

*Not printed (One cyclostyled copy laid on the Table of the House and five copies placed in Parliament Library).

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PART II •

Minutes of the sittings of the Public Accounts Committee held on :
10th July, 1970 (FN)
5th July, 1971 (AN)

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(1971-72)

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Shri B. B. Tewari—*Deputy Secretary*

Shri T. R. Krishnamachari—*Under Secretary*

* Since resigned from the Committee w.e.f. 17-6-1971.

INTRODUCTION

1. I, the Chairman of the Public Accounts Committee, as authorised by the Committee, do present on their behalf this Third Report of the Public Accounts Committee (Fifth Lok Sabha) on paragraph 36 of the Audit Report (Civil), 1970 relating to Exploratory Tubewells Organisation.

2. The Audit Report (Civil) 1970 was laid on the Table of the House on the 14th April, 1970. The Committee (1970-71) examined paragraph 36 relating to Exploratory Tubewells Organisation at their sitting held on the 10th July, 1970. Consequent on the dissolution of the Lok Sabha on the 27th December, 1970, the Public Accounts Committee (1970-71) ceased to exist with effect from that date. The Committee of 1971-72 considered and finalised the Report at their sitting held on the 5th July, 1971 based on the evidence taken and the further written information furnished by the Ministry of Agriculture. The Minutes of the sittings from Part II* of the Report.

3. A statement containing summary of the main conclusions recommendations of the Committee is appended to this Report (Appendix VIII). For facility of reference these have been printed in thick type in the body of the Report.

4. The Committee place on record their appreciation of the commendable work done by the Chairman and the Members of the Public Accounts Committee (1970-71) in taking evidence and obtaining information for this report which could not be finalised by them because of the sudden dissolution of the Fourth Lok Sabha.

5. The Committee place on record their appreciation of the assistance rendered to them in the examination of this paragraph by the Comptroller and Auditor General of India.

6. The Committee would also like to express their thanks to the officers of the Ministry of Agriculture and the Exploratory Tubewells Organisation for the cooperation extended by them in giving information to the Committee.

ERA SEZHIAN.

Chairman,

Public Accounts Committee.

NEW DELHI:

July, 5, 1971

Asadha 14, 1893 (Saka)

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I

INTRODUCTORY

1.1. Exploratory Tubewells Organisation was set up in 1954 under the Ministry of Food, Agriculture, Community Development and Cooperation (Department of Agriculture). This Organisation deals with delineation and demarcation of areas which are worthy for exploitation and utilisation of groundwater resources (water found beneath the surface) through tubewells for irrigation and domestic purposes. It also undertakes quantitative assessment studies of groundwater in selected areas

1.2. The Organisation initially undertook groundwater exploration under Operational Agreement No. 12 executed by the Government of India with the Technical Cooperation Mission of the Government of U.S.A. in March, 1953. The operational agreement expired on the 30th June, 1959 and the period covered by it and upto the 31st August, 1959 had been termed as Project I. It was decided to continue groundwater exploration in areas not completed under Project I as well as in new areas suggested by the State Governments during the remaining period of the Second Plan. The period from September, 1959 to the end of the Second Plan had been termed as Project II. The organisation had been continued further on the temporary basis.

1.3. The Team of technical officers of the Oil and Natural Gas Commission which went into the working of the Exploratory Tubewells Organisation since its inception with a view to suggesting improvements has observed in Chapter X of its report submitted in April, 1969 as follows:

"Although the Exploratory Tubewells Organisation has been in existence for a number of years, it has not been given a permanent status. In view of the fact that the need for water from underground resources, both for domestic and irrigation purposes, will be ever increasing, more so, on account of the phenomenal growth of population in the country, the exploration and exploitation of underground resources will remain for ever. The Team, therefore, strongly feel that the Organisation have a very good claim and justification to be put on permanent footing, which in fact, is long overdue. Needless to say that it will go

a long way in raising the morale of the officers and staff, who though have spent already the best part of their career in this Organisation, have yet not attained a permanent status. This will also certainly result in a much better overall performance and operational efficiency."

".....it was observed by the Team that within the last few years, there have been mass scale inter-state movements of Field Divisions, involving extensive transportation of men, machinery and equipment, some time even during the working season, for one reason or the other. These frequent movements were largely responsible for the lower output of work and uneconomical performance.... In fact, a probe into these movements revealed that in some cases these were ordered rather recklessly resulting in complete dislocation of field operations and chaos, since a number of working months were lost in moving the men, machinery and equipment to and fro from one State to the other over long distances. Needless to say that this was also responsible for considerable amount of avoidable infructuous expenditure....."

"In view of the fact that this Organisation is now being recommended to be brought on a permanent footing for various reasons stated earlier, the Team recommends that the entire area in the country to be explored exploited for development of water resources should preferably be divided into five working zones so that a Field Division could be located on a permanent basis in each of these zones, thereby eliminating the necessity of their frequent shifting, as is being done at present."

1.4. The Team recommended location of permanent headquarters of the five field divisions as given below:

- (a) Field Division No. I: to cover States of Gujarat, Madhya Pradesh, Rajasthan and Maharashtra with headquarters at Ahmedabad
- (b) Field Division No. II: To cover States of Punjab, Haryana, Himachal and Jammu & Kashmir with headquarters at Ambala.
- (c) Field Division No. III: To cover States of Uttar Pradesh and Bihar with headquarters at Varanasi.

why an assessment of the extent of work to be done with a view to determining the life and character of the Organisation could not be made immediately well before the termination of the Operational Agreement No. 12 in 1959.

1.9. It was only in 1968 that Government recognised the above shortcomings and remitted the problem to a technical team. The Team has recommended inter-alia grant of permanent status to the Organisation. The Committee desire to know the decision of Government in this regard. The Committee would urge that the location of headquarters of the fifth Division which was stated to be under consideration should be decided upon without further delay.

II

ACTIVITIES OF THE ORGANISATION

2.1. The Technical Team in Chapter II of their Report has observed: "That whereas a beginning was made with exploratory work, for which the ETO was basically established, from the year 1960-61 onwards, there has been a progressive decline in the exploration activities and by and large the Organisation has been drilling 'Deposit wells' on the demand of various State Governments."

2.2. The year-wise details of exploratory and production tube-wells drilled since the inception of the Organisation to the end of 1969-70 in different parts of the country, as furnished by the Ministry are given below:

Year	Exploratory wells	Production wells
1955-56	30	..
1956-57	57	..
1957-58	95	..
1958-59	87	..
1959-60	57	..
1960-61	55	10
1961-62	52	69
1962-63	74	122
1963-64	65	67
1964-65	10	212
1965-66	3	257
1966-67	..	187
1967-68	2	155
1968-69	63	106
1969-70	113	127
TOTAL	763	1312

2.3. Explaining the circumstances under which the Organisation had to take up work on production wells, the witness stated:

"I may briefly recapitulate the circumstances in which ETO started production drilling. From 1954 to 1959-60 we did not undertake even a single production well. In 1961 a

Technical Committee under the Chairmanship of Dr. Wadia was appointed by the Government of India to review the work of the ETO. This Committee recommended that the ETO may also take up production drilling. Many of the State Governments had no arrangements of their own and they wanted tubewells for irrigation. In 1961 the ETO took a policy decision to take up such works. Then came the drought years and everybody pressed for more production wells. However, we are now trying to encourage the State Governments to have their own production arrangements as far as possible and this will be reflected in this year's figure."

2.4. The witness further stated: "We are concentrating largely on exploration except for a few areas where we took up production wells on account of exigencies of droughts. We have again in fact restored the balance in favour of exploratory wells and in 1969-70, 113 exploratory wells were dug which is the largest so far in any one year. This year we hope to do 253 exploratory wells which will be more than the double of last year."

2.5. The Committee wanted to know how the areas were chosen for exploratory drilling. The witness deposed: "Right in the beginning in 1954, when it was decided to take exploratory drilling under a TCM Programme, it was felt that apart from the Indo-Gangetic plain proper where water exists, it was necessary to find out conditions of ground water in many other non-hard rock area and at lower depths. From the geological point of view the GSI was consulted and they felt that first priority should be given to certain areas where there was not enough water at the upper levels and there may be possibility of finding water deeper down. Most of the work was done in Gujarat, along the foothills of Himalayas in U.P. and Rajasthan and we did find that although there was no water in the upper 100' or so, there was water below that. After that, we are trying, in collaboration with the G.S.I. to prepare a complete geological map of the country. Ultimately the object is that there should be detailed maps for each tehsil, taluk and even village, particularly in the hard-rock area where the geology is much more difficult, which would show whether there are possibilities of striking water."

2.6. According to the Technical Team quite a lot of work still remains to be done in the field of ground water exploration in certain parts of the country. The exploratory activities of the ETO were by and large restricted to the alluvial tracts and soft rock

formation only. Hard rock areas have not been taken up for exploration at all.

2.7. The Committee enquired whether the ETO had identified the chronic drought affected areas and whether priority had been given to those areas in the matter of exploration of ground water potential. The witness stated: "This question figured prominently in our discussion with the State Governments. Chronic drought affected areas were demarcated by the State Governments and they have been divided into three categories i.e. A, B and C. A & B are worst hit. In our discussions last year the GSI agreed to do the preliminary geophysical investigation and survey of the priority 'A' areas. Mostly these are hard rock areas and State Governments will move in and undertake further detailed work in order to improve the situation."

2.8. Asked whether the ETO would undertake drilling operations in those areas, the witness added that the Organisation worked at present only in non-hard-rock areas (as it was not equipped to take up work in hard rock areas) and that it was considering whether it could take up work in hard rock areas in future.

2.9. The following are the State-wise details of exploratory work done upto the end of 1969-70:

State	No. of wells drilled	No. of wells proved successful
Andhra Pradesh	47	24
Assam	19	17
Bihar	30	13
Gujarat	94	23
Haryana Punjab	88	25
Kerala	5	1
Madhya Pradesh	56	31
Maharashtra	32	2
Mysore	4	..
Orissa	33	19
Rajasthan	165	30
Tamil Nadu	60	31
Uttar Pradesh	62	45
West Bengal	60	50
Jammu & Kashmir	..	5
Total.	763	316

2.10. According to the Performance Budget of the ETO for the year 1970-71, the "Organisation has covered an area of 70,000 sq. miles till the end of 1968, out of which 24,000 sq. miles has been proved ground water worthy, thus creating a potential for additional 12,000 tubewells which may irrigate 2.5 million acres. Analysis of the data to establish further potential of ground water resources on the basis of exploratory work done from January, 1969 is under progress."

2.11. The Committee drew attention of the witness to the United Nations Development Project located at Jodhpur. The witness gave the details of the project as follows:

"It is a joint project for carrying out a quantitative assessment of ground water resources. The idea is to find out what the reasons are so that we do not exceed the safe limits of pumping. This study involves a study of the rainfall conditions and other factors to determine how much water collects in the underground reservoirs, with the object of finding out how much could be the safe limit for pumping. As a result of such studies completed in one of the three areas in Rajasthan covered by the UNDP, we have already brought out report in respect of the Jalore region. It has been established that the amount of drawal that is already being made is outside the limit of safe drawal and the State Government have accordingly been advised by us. They were under the impression that they could instal 100 or 200 tubewells more in that area but now as a result of the study which has taken three years to complete we are in a position to give reliable advice to them that the limit has been reached already. Ultimately we shall have such quantitative assessment of all the ground water aquifers so that there is no indiscriminate pumping and only that amount of water is pumped out as enters it every year by rainfall or underground movement."

2.12. From 1962-63 to 1967-68, there was a progressive decline in the exploratory activities of the Organisation. During evidence the Committee were informed that Government decided in 1961 to take up production drilling also for irrigation purposes as many of the States had no arrangements of their own and that there were years of drought which necessitated sinking of more production wells. While the Committee appreciate the need for production drilling, they are of the opinion that the exploratory work should not have suffered such a serious setback during the period 1965-66 to 1967-68

when there was little or no exploratory drilling for which the Organisation was primarily meant.

2.13. The Committee learnt that the State Governments are being encouraged to have their own production arrangements and that the Organisation has restored the balance in favour of the exploratory wells since 1969-70. Till the end of 1968 the Organisation covered only an area of 70,000 sq. miles. In view of the vast ground yet to be covered, the Committee hope that the Organisation would concentrate on the exploratory work in future leaving the exploitation to the State Governments and private sector.

2.14. The Organisation, not being equipped to explore hard rock areas has so far been confining its activities to the non-hard rock areas only. As there is an urgent need to assess the groundwater potential in chronic drought affected areas which are mostly hard rock areas, the Committee would suggest that the ETO should be equipped to undertake exploratory work in these areas early.

2.15. Quantitative assessment of groundwater resources is an important aspect of exploration to which the ETO should address itself in the coming years. The Committee would commend the work done by the United Nations Development Project in the Jalore region as a model for the work to be done in the rest of the country.

2.16. The ultimate aim of the ETO is to have a detailed map for the entire country which would show the possibilities of striking water and a quantitative assessment of all the ground water aquifers which would indicate the safe limit for pumping. The Committee would like a perspective plan to be drawn up defining priorities in consultation with the Geological Survey of India and the State Governments with a view to cover the whole country.

III

OVERALL PERFORMANCE

3.1. The Ministry furnished State-wise information regarding the number of wells drilled, number of wells proved successful and number of wells handed over to State Governments since the inception of the Organisation upto the end of 1969-70 as also the targets and achievements vide Appendix I.

3.2. The table below gives the overall position of target and achievement of the Organisation upto 1969-70:

	Target	No. of wells drilled	No. of wells found successful	No. of wells handed over to State Governments
Exploratory Wells	1297	763	316	251
Production Tubewells	1952	1314	1076	Not given

Only the cost of successful bores and of tubewells constructed on behalf of the State Governments is recovered from them.

3.3. The Committee pointed out the low percentage of successful exploratory wells and wanted to know whether there was effective coordination with the G.S.I. The representative of the Ministry stated: "Before we bore a well, we select a site in consultation with GSI, who determine whether there is likelihood of water or not. These methods are getting more and more refined and it is now possible to predict with greater accuracy whether water will be struck at a certain point or not. But when we say so many are successful, we bring in another concept. Many years ago, it was decided to describe as successful only such wells as yielded one cusec of water, i.e. about 20,000 gallons per hour. This we now consider is an unrealistic criterion and as far as exploratory work is concerned, our purpose is served even if we get a thousand gallons, because our purpose is to find out how much water there is. It was for the purposes of handing over tubewells to State Governments to be run as State tubewells that the 20,000 gallons per hour criterion was adopted. We are, however, no longer concentrating on production wells. As our geophysical methods are getting better, we will get higher percentage of successful wells."

3.4. The Estimates Committee, in their 130th Report (1960-61) recommended that "the criterion fixed (20,000 gallons/hour) needs a careful review to see if even lower specification would do taking into account its economics. There may be special relaxation of the specification in the case of scarcity areas". To this recommendation, Government gave the following reply which was accepted by the Committee:

"The recommendation made by the Committee has been considered and it is felt that while the existing criterion for a successful tubewell need not be changed, State Governments should be encouraged to ask for development of a well with a lesser discharge if it would be economical in any particular areas. With this object in view State Governments will be asked to indicate before operations are started what the minimum quantity and quality of water are acceptable to them. The cost of wells with yields lower than 20,000 gallons per hour will be recovered according to the prescribed formula."

3.5. The Technical team appointed by Government observed as follows:

"Since in the past a large number of wells have been abandoned merely on account of their discharge being less than 20,000 GPH, it would be advisable to locate the sites near the villages as far as possible without sacrificing the levels so that in the event of any of the completed exploratory wells being found to be sub-standard for irrigational purposes, these could be at least used for domestic or other purposes."

3.6. The Technical Team took note of the fact that in actual practice the GSI was not giving the requisite clearance in respect of some areas for exploratory work well in advance as a result of which there had been a serious setback in the exploratory programme of ETO.

3.7. During evidence the witness, however, explained the procedure adopted in the following terms:

"On all the exploratory programmes right from the consideration of the perspective plan, we have the GSI at every stage consulted on the areas to be entered for ground water exploration and for the purpose of identifying the

parameters to be obtained from this programme of drilling. So, we have strictly followed this with the association of the GSI. The Director, Geological Survey of India is on the board of management of the ETO. Subsequently from 1966, we have consulted them on our perspective plan of the Fourth Plan and all the 74 areas projected under the Fourth Plan have the approval of the Geological Survey of India in terms of clear and uncleared areas.

In the uncleared areas, they have also been requested to give the results of their studies.

In some of the areas out of 74 which we have projected in the plan the GSI would like to conduct a little more of regional inventory and geophysical study as they normally do in their programme as the pre-requisite for clearance. We enter for exploration only the areas where they have cleared us. So far as the annual plans as well as Fourth Plan are concerned, in regard to the areas to be cleared there is perfect coordination."

3.8. In reply to a question the witness stated: "As far as exploratory tubewells are concerned, we never bore or drill unless the site has been cleared first by the GSI that it is likely to yield water. As for production wells, we operate only in areas which have been proved to be groundwater worthy."

"Previous drilling and technical reports are taken into account. Bulletins are also issued regularly by the GSI. These various reports contain information about the quantity of water and the depth at which it is available."

3.9. The Committee then drew attention of the witness to the following observations contained in the report of the Technical Team:

"There are many instances where GSI reports were not published as in Rajasthan but the area was taken up for exploration by ETO and a part of the area proved to be highly potential for ground-water resources. In some areas which were affected by drought, the ETO had to move in for deposit well drilling programme without a clearance from the GSI".

"All this goes to show that there is no set plan and procedure for the selection of sites. If the number of abandoned wells are to

be reduced, it is necessary that the procedure recommended by Achievement Audit Committee in their Report (page 5) on the Exploratory Tubewells Organisation, April, 1961 should be strictly followed. In areas where geology is complicated i.e., in Gujarat and Rajasthan, exploration work should not be taken up unless geophysical surveys have delineated areas for exploratory drilling."

3.10. The witness stated: "This particular reference is mainly in regard to the work in Rajasthan under the 200 wells drought programme. It is not strictly with reference to the production programme and it is not also with reference to the exploration work. In the exploration work, we have certainly to get the geophysical surveys to be done wherever it is warranted. In regard to one or two areas mentioned here, for example in Jammu area, the plan has been spelt out. Sometimes we do encounter certain difficulties with the State Government for occasionally changing the priorities. But, we have to stick to our programme of drilling for exploration for the necessary scientific information. And sometimes we do drill additional wells in such terrains partly accommodating the State priorities for scientific purposes. That is in the type of terrain mentioned here, that is Jammu area, where the hydrological parameters are not available. Apart from this, we have not entered into the areas physically for exploration without the clearance of the GSI."

3.11. The Committee understood from Audit that Government informed in December, 1969 *inter alia* that "the clearance of the Geological Survey of India for taking up exploratory drilling in Eastern Rajasthan was received and it was decided to take up this work. However, as some of the tubewells already constructed by ETO in Rajasthan were not being commissioned and put to use by the State Government, it was decided in November, 1967 not to take up any further work in Rajasthan. Thus, the programme of exploration in Rajasthan for the year 1967-68 had to be dropped."

3.12. The Committee wanted to know whether State Governments were consulted in the matter of selection of sites for exploration. The witness deposed: "I would submit that in the very first programme which went on upto 1959, the areas were chosen without reference to the State Governments. But, during the last two or three years, we have started consulting the States also. The reason is this that the States have a very direct stake in the development of their agricultural production and also in the money which is now available for ground water development, from sources such as the

Land Mortgage Banks, Agricultural Refinance Corporation, commercial banks etc. These bodies have to be satisfied that in the areas where tubewells are to be sunk with their money there would be sufficient water available. We are now trying to see that we explore those areas with which the States are concerned and in which they are more interested to develop. In most such cases some detailed work is necessary to satisfy the States that water does exist and in such and such quantities.

We have now drawn up a list of areas in consultation with State Governments, the GSI and ourselves—all the three sitting together at the same table—and maps of these areas have actually been drawn up.”

3.13. Dealing with well design, the Technical Team stated: “A little more care and improved well design can make a significant increase in well productivity. It is clear that such wells result in a great loss to the Organisation and very serious view should be taken of this situation. Detailed scientific studies should be initiated to ascertain the effect of various factors on well productivity to evolve proper well designs in different areas. This will not only reduce the number of abandoned wells, it will also result in considerable saving to the Organisation”.

“From the data made available to the Team it seems that the development of the wells is not given adequate attention and the job is done rather in a haphazard manner. There were instances in Rajasthan where wells drilled even in the proven area gave very low discharge as compared to the surrounding wells. On the instance of the State Government, development was again carried out and the well productivity increased considerably. Unsuitable pumps and equipment and lack of supervision seem to be the main reasons for these bad state of affairs.”

3.14. The Technical Team found that “inspection of field operation both by the senior officers at the headquarters and even the Executive Engineers in the Field Divisions were far too inadequate resulting in poor operational efficiency and overall achievements”.

3.15. That Organisation has not given a good account of itself will be evident from the fact that as against a target of 1297 exploratory tubewells, only 763 could be drilled upto the end of 1969-70. The target and achievement in relation to production tubewells were 1662 and 1314 respectively. The Committee would like

to know the specific reasons for the failure to reach the targets which must have obviously been fixed from year to year taking into account all the limitations of the Organisation.

3.16. Of the wells drilled only 316 exploratory and 1076 production wells proved to be successful. As the production tubewells are sunk only in proven areas the Committee do not understand the reasons for the failure. As regards exploratory tubewells, the Committee hope that an effective coordination with GSI would be established so that there may not be such large scale failures involving infructuous expenditure.

3.17. Out of the 316 successful exploratory wells sunk, only 251 were handed over to State Governments. The Committee note that some of the tubewells constructed in Rajasthan were not being commissioned and put to use by the State Government. This points to the need for proper consultation with the States before selecting sites for exploration as they are the ultimate users of the tubewells.

3.18. During evidence the Committee were informed that tubewells that yielded 20,000 gallons per hour were at present regarded as successful and handed over to State Governments on payment of cost. The Committee desire that mutually acceptable terms in regard to minimum yield and payment of cost be settled in future between the Organisation and State Governments before undertaking drilling so that the entire cost of wells with yields less than 20,000 gallons per hour may not go waste.

3.19. The Committee are concerned to find that according to the Technical Team "development of wells is not given adequate attention and the job is done rather in a haphazard manner." In some cases wells drilled even in proven areas gave very low discharge as compared to surrounding wells with the result that the work had to be redone at the insistence of State Government at extra cost. The Committee expect that such specific instances of lack of proper care and supervision would be dealt with severely. In this connection the Committee hope that in order to bring down the number of abandoned wells detailed scientific studies would be initiated to evolve proper well designs for different areas as suggested by the Technical Team.

3.20. The Committee take a serious view of the findings of the Technical Team that "Inspection of field operation both by the senior

officers at the headquarters and even the Executive Engineers in the Field Divisions were far too inadequate resulting in poor operational efficiency and overall achievements." The Committee trust that such laxity in supervision will not be allowed to continue.

IV

RESULTS OF THE WORK DONE

4.1. Asked to indicate the additional area brought under irrigation and the increase in agricultural production achieved as a result of the work done so far by the ETO, the Ministry stated that the Organisation had so far handed over 1303 successful wells to the State Governments, which are being operated by them for irrigation and drinking water purposes and that it was not possible to give information about the additional area being irrigated by those wells.

4.2. During evidence the Committee wanted to know the extent of increase in production achieved as a result of the efforts of the ETO and enquired whether the Organisation maintained any such statistics. The representative of the Ministry stated: "We have not been able to collect such figures nor have we maintained them, the reason being that apart from the wells which we drill and which are handed over to the State Governments, the main purpose of our work is to prove the existence of water in certain places. There are statistics which show that subsequent to our work, a large number of wells have come up either privately or built through Government loans and this contributed largely to increased production. But we do not maintain all these statistics. But the very fact that ground water development has shown an increase of several hundred per cent in the last three to four years, shows the extent to which these new opportunities are being availed of."

4.3. Thereupon the Committee drew the attention of the witness to the following recommendation of the Estimates Committee contained in their 130th Report (1960-61):

"The Committee feel that the Organisation should maintain accurate statistics of areas brought under perennial irrigation and the increase in agricultural production achieved as a result of the project. It need hardly be pointed out that such data is essential to assess whether successful wells have been able to irrigate land to such an extent as to justify expenditure on the Exploratory Tube-wells Organisation."

4.4. While intimating the action taken on this recommendation, the Ministry of Food and Agriculture, (Department of Agriculture) had vide their O.M. No. 5-22|61-T.W., dated 22nd December, 1961, stated:

"The recommendation has been noted and action is being taken to maintain the necessary statistics."

4.5. To an enquiry as to why relevant statistics were not maintained despite the assurance given to the Estimates Committee as far back as in 1961 that action had been taken to maintain necessary statistics, the representative of the Ministry said: "I regret Sir, that this recommendation seems to have been overlooked. We will now collect the necessary figures and maintain the statistics."

4.6. The Committee desired to know whether there was any machinery in the Ministry to see that recommendations of Parliamentary Committees were implemented. The Secretary, Department of Agriculture stated that instructions were sent to the Tubewells Organisation and that obviously there was a failure to implement. He added that there was a stage when the Secretariat organisation for the ETO's work was not perhaps adequate.

4.7. In a note submitted to the Committee, the Ministry intimated that efforts were made to maintain the statistics for sometime but subsequently it was not possible to do so due to the following reasons:

- (1) Successful wells are handed over by the Exploratory Tubewells Organisation to the State Governments for operation and utilization. The State may or may not take adequate measures for their proper utilisation.
- (2) Sometimes the successful wells under the exploratory programme originally sited from the point of view of investigation are not ideally located from the point of view of production wells. Hence the State experience difficulty in their proper utilization.
- (3) It needs to be stressed that ETO's work is not to be judged merely by the additional area irrigated by the tubewells sunk but by the nature, quality and quantum of exploratory work done by it. The main function of the ETO is to undertake groundwater investigations to ascertain whether a particular area is groundwater worthy so that further development can be undertaken. After all the fact that the ETO proved during the course of its investigations the existence of groundwater in sizable quantities

in the Chandan area (Jaisalmer) is much more important than the fact that a few tubewells were also sunk by ETO in that area. In district Jalore, investigations in an area of 6,750 sq. Kms. for quantitative assessment and ground water balance study has also been completed. This is the first project of its type for the quantitative assessment of ground water resources of a particular region taking into account the present storage of water, annual rainfall, flow of surface water in rivers, annual precipitation, loss of water due to evapotranspiration, annual recharge etc. As a result of this investigation, this area is considered to be over-exploited and there is no scope for the construction of any more tubewells for irrigation. But during the course of this investigation only 35 bores were drilled of which 5 have been developed into production wells. In West Bengal ETO covered about 9000 sq. miles under the exploratory programme and proved 6000 sq. miles as ground-water worthy with potential for drilling about 4000 deep tubewells. The West Bengal Government has already drilled 1500 deep tubewells in the proven areas and has further programme of drilling 1000 more deep tubewells, during the Fourth Five Year Plan Period. These few instances show that the results of exploratory work done by ETO are more important than the area actually irrigated by the wells sunk by it as part of its exploratory programme.

- (4) Some of the wells constructed in arid regions and urban areas are being utilised for drinking water supply and in respect of this there is no question of any additional area being brought under irrigation and the resultant increase in agricultural production. But from the point of view of exploratory work, even unsuccessful wells which are not developed as full-fledged tubewells and are abandoned also yield valuable data. Also after an area is cleared by the ETO, a large number of tubewells are constructed by State Organisations and private constructors and as such the additional area brought under irrigation by the tubewells constructed by State Organisations and private agencies."

In view of the position explained above, it would not be appropriate and might be somewhat misleading to judge ETO's performance merely on the basis of area brought under irrigation by tube-

wells constructed by it. ETO is a scientific-cum-technical Organisation and its performance should be judged by scientific evaluation of the exploratory works done by it and how this work has led to further development of groundwater resources."

4.8. During evidence the Committee pointed out that the performance of the Organisation could not be judged in the absence of statistics of increase in agricultural production. The Secretary, Department of Agriculture stated: "I agree, Sir, that with regard to both the exploratory tubewells and the production tubewells, it should be possible for us. In fact, we should get all statistics of how much each of these wells contributes to either the increase in food production or in stepping up the drinking water supply which also became a matter of some urgency. It should be possible to do that and thereafter, I think, we can develop this exercise of keeping an account of how much the exploratory work has paved the way for additional work in that area. I have no doubt in my mind that our system of data collection and data analysis should get into this."

4.9. According to a witness the total amount spent on the ETO so far was Rs. 4.77 crores after deducting the amounts received from the State Governments for production wells.

4.10. The Committee note that till the end of 1968 a potential has been created for additional 12,000 tubewells which may irrigate 2.5 million acres. The system of data collection and data analysis should forthwith get into an assessment of the extent of actual utilisation of the created potential and the resultant increase in agricultural production if the Organisation is to justify its existence.

V LOSS OF OPERATIONAL DAYS

Audit Paragraph

5.1. The table below shows that while expenditure on operations conducted by the Organisation has constantly increased during the four years ended with 1968-69, the footage drilled and the number of days for which rigs have actually worked have gone down considerably:—

Year	No. of rigs	Operational expenditure (Rs. in lakhs)	Footage drilled (in lakhs)	Loss of operational days				No. of days for which the rigs worked
				Due to transit	Due to repairs	Off season	Misc.	
1965-66	28	19.6	1.13	16	566	704	1553	7076
1966-67	27	20.18	0.61	321	471	1408	1523	6132
1967-68	28	23.46	0.56	235	891	1579	1658	5819*
1968-69	24	24.06	0.55	583	1227	2090	1665	3195

5.2. The regular complement of staff per rig was maintained when the rigs were under repair or were not in operation due to miscellaneous reasons. The average expenditure per footage drilled increased from Rs. 16.87 in 1965-66 to Rs. 43.75 in 1968-69. The expenditure incurred on staff and maintenance of rigs for the operational days avoidably lost during the three years ended with 1968-69 would run into several lakhs of rupees.

5.3. Government stated that the loss of operational days under the head 'miscellaneous' could be reduced by proper advance planning for making available ancillary equipment gravel, drilling, mud in time and also by sticking to the approved programme. But in actual practice this also becomes difficult.

5.4. A committee appointed by Government in September, 1968 to study and report on the working of the Organisation stated (April, 1969) inter alia that:

- (i) "The standard of servicing and maintenance of the drilling rigs, ancillary equipment like electric generating sets,

*66 days difference due to one Winter Weiss rig of Delhi which worked only for 300 days—66 days were under waiting for orders.

welding plants, pumps and both the heavy and light transport vehicles was generally found to be very poor and unsatisfactory. Serious neglect of servicing and maintenance of machinery, equipment and transport vehicles is apparently by and large responsible for the progressive deterioration in the operational efficiency of the Organisation”.

- (ii) “There is no organised system of carrying out periodical and preventive maintenance on the machinery, equipment, transport vehicles and ancillary equipment in any of the Field Divisions, on account of which considerable number of avoidable working hours are being regularly lost.”
- (iii) “Since most of the engines are of imported type, on account of the serious difficulties and delay in getting the requisite spare parts for repairs and renovation of the FI pumps and injectors substantial number of productive hours are being continuously lost.”

[Paragraph 36(A) of Audit Report (Civil), 1970.]

5.5. The Committee drew the attention of the witness to the table given in the Audit Para and pointed out that during the period 1965-66 to 1968-69 the operational expenditure had gone up from Rs. 19.06 lakhs in 1965-66 to Rs. 24.06 lakhs in 1968-69 whereas the footage drilled had come down from 1.13 lakhs to 0.55 lakh and that the number of days for which the rigs worked was reduced from 7076 to 3195 with only a marginal reduction in the number of rigs. The Committee desired to know the reasons for the progressive decline in the performance of the organisation. The Secretary, Department of Agriculture, stated:

“It is quite obvious that the defects which have been pointed out cannot be adequately explained away. But we have tried to analyse the reasons and some of these have been as we have shown in the Table, Sir, i.e. very considerable loss of time due to transit and due to repairs because of these rigs having got older and the difficulty is in obtaining spare parts. The point regarding transit will be illustrated by the fact that in the base year, 1965-66, when a comparison had been made, the operations were confined to two States—Rajasthan and Gujarat. Subsequently because of the drought conditions and the problem of drinking water having arisen in an acute form in various States we

have had to do a lot of criss-cross movement of these rigs in order to attend to the emergency operations."

5.6. The Committee were informed that 14 new rigs were purchased and that had contributed towards considerable improvement in the performance in the year 1969-70 in which the total footage drilled was 1.69 lakhs.

5.7. The Ministry intimated the number of rigs employed, operational expenditure, footage drilled, loss of operational days and the number of days for which the rigs worked during the year 1969-70 as follows:

No. of rigs.	Operational expenditure (Rs. in lakhs)	Footage drilled (in lakhs)	Loss of operational days				No. of days for which the rigs worked
			due to transit	due to repairs	Off season	Misc.	
30	29.23	1.69	117	994	1328	2100	4890

5.8. The Committee observed that even with the addition of new rigs the performance of the organisation during 1969-70 did not seem to be substantial in as much as the number of days for which the rigs worked was 4890 only as against 7076 in 1965-66. The witness stated:

"I was not claiming that everything has been set right. What we are doing has shown an improvement. When we acquire the rigs, the commissioning of the rigs and their deployment as also setting up the necessary organisation takes time. We have made our planning and we have also made improvements in respect of the stocking of spare parts. In the current year, 1970-71, our target is for 350 wells. I would venture to submit that this figure would show that despite our failings which had been highlighted in the Audit Report, we had taken sufficient corrective measures which are reflected in the improved performance."

5.9. The attention of the representative of the Ministry was drawn to the following observations in the Audit paragraph:

"Government stated that the loss of operational days under the head 'miscellaneous' could be reduced by proper advance planning for making available ancillary equipment

gravel, drilling, mud in time and also by sticking to the approved programme. But in actual practice this also becomes difficult."

5.10. The representative of the Ministry explained the position as under:

"I would like to submit that during the past two years, we have tried consistently to plan ahead at least twelve months ahead—and to fix the programme of ETO in such a manner that when the working season starts every rig should know where it is to go and what work it has to do. In this connection I might mention some of the steps we have actually taken. There used to be a certain amount of difficulty with regard to coordination with the GSI and also with the State Governments who showed interest in the programme of the ETO and we have been able to demarcate the areas in which it will operate during the Fourth Plan. It is true that some amount of departures from such plan is found necessary, for example, when a State Government is insistent that a certain area should be explored rather than another. The decisions we have taken so far have been in consultation with the State officials."

5.11. The percentage of loss of operational days to the total working days during the years 1965-66 to 1969-70 approximately works out to:

Year	Percentage loss of working days
1965-66	29%
1966-67	37%
1967-68	42%
1968-69	63%
1969-70	44%

5.12. The Ministry furnished rig-wise details of loss of operational days during the years 1965-67 to 1969-70 which are reproduced in Appendices II to V.

5.13. A number of rigs suffered loss of operational days for more than 120 days in a year due to off-season or waiting or transit or repairs as shown below:

Year	No. of rigs which lost operational days for more than 120 days			
	due to off-season	due to waiting	due to transit	due to repairs
1966-67	3	2	..	..
1967-68	4	1	..	3
1968-69	7	4	2	4
1969-70	..	2	..	1

5.14. The table below indicates the number of rigs which actually worked for less than 120 days in a year.

Year	Total No. of rigs	No. of rigs which worked for less than 120 days
1966-67	27	1
1967-68	28	3
1968-69	24	9
1969-70	30	8

5.15 There was heavy loss of operational days in 1968-69. "To shift emphasis from deposit to exploration programme and to place machinery in position for taking up work programme for 1968-69, a large scale movement from one State to another was involved."

5.16. The Committee were informed that no work was possible during monsoon months—July to September—in eastern States. Explaining the progressive increase in the loss of operational days due to off-season the witness stated that in 1965-66, 170 wells were drilled in Rajasthan which were in a compact area where there was no rain and another 46 in Gujarat in a very dry area and that subsequently the rigs were moved to the east where there were rains. The Committee pointed out that as far as possible repairs and maintenance could be attended to during off-season so that drilling could be done in the working season. The representative of the Department of Agriculture, conceded that repairs were taking place and the rigs were moved during the season thereby increasing the total loss of operational days.

5.17. The Committee understood that 'waiting' which was given as one of the reasons for loss of operational days connoted waiting

for site, waiting for instructions and decisions from higher officers, waiting for material, waiting for equipment and waiting for staff etc.

5.18. While dealing with the loss due to transit, the Committee drew attention of the witness to the recommendation of the Estimates Committee contained in their 130th Report (1960-61) to the effect that "the work of boring in all the areas may be chalked out as a whole and rationally distributed so as to minimise the shifting charges and transit time." The witness stated: "In 1961, the Third Five Year Plan was prepared as part of the perspective plan of the ETO and now again for the Fourth Plan, we have prepared a plan. We have in fact even chosen the areas."

5.19. The Committee was further informed that ETO was now having yearly plans also. When it was pointed out that despite the fact that the ETO was working according to plan, the results achieved were not satisfactory, the representative of the Ministry explained:

".....these three years were really bad.....in the sense that no proper maintenance of the rigs took place and no proper pre-planning of each year's activity seems to have been done in those years. Otherwise, the results would have been better."

5.20. In a note submitted to the Committee, the Ministry furnished a statement showing the average footage drilled per rig per day during the years 1965-66 to 1969-70 which is reproduced in Appendix VI.

5.21. The Committee were informed that one of the reasons for the poor performance was that the rigs had become old. Asked about the normal life of the rig, the witness stated: "Our technical advisers say that it depends on the type of terrain, the type of maintenance and so on. The conditions being more or less normal, the life of a rig is about 15 years. However, it can vary a great deal. It can go upto 20 or 22. It can be less—say 10 years if it is used carelessly."

5.22. The Committee wanted to know the present position of the rigs. The witness said: "Out of these we have discarded 8 from among the oldest. We now have a fleet of 37. We have already discarded 8 as being too old to be put to any use and two other are being put to light use. These two are being used for subsequent operations like transport and as cranes etc.".

5.23. To a question the witness stated that there was a problem with regard to the technical staff and that the organisation had two retired Chief Engineers. He added that as the organisation was on a temporary basis, it was not able to attract the right kind of staff. Asked why persons were not taken on deputation from other organisations, the witness stated as follows:

"Till 1964, there was practically no drilling activity anywhere in India, and we did not find any properly trained men. And it is also a fact that on account of the life of the Organisation being extended from time to time, some of the better people left us to join other Organisation because there is a great demand from organisations like ONGC and so on. We are, however, now working out a proper long range plan to strengthen the whole organisation and get good staff. Only last year, we approached the ONGC for assistance in securing the services of really experienced person to head our Organisation. And they could not spare even a single person. That is the kind of difficulty we have been facing. All the Heads of the Organisation, except for about a three year period, have been irrigation Engineers drawn from the State Governments, who were not very familiar with the drilling techniques and particular problems of such an organisation."

5.24. In a written reply submitted to the Committee, the Ministry informed that the post of the Chief Engineer was lying vacant since 4th September, 1968 and that it had been decided to post the Project Director, UNDP (SF) as Chief Engineer. ETO after getting the approval of the UPSC.

5.25. The Committee are distressed at the abnormal loss of operational days ranging from 37 per cent to 63 per cent of the total working days during the years 1966-67 to 1969-70. Apart from the loss of operational days, the rigs do not appear to have worked at the optimum level of efficiency. All these resulted in poor overall performance and high cost of operation. To put it in the words of a representative of the Ministry, "no proper maintenance of rigs took place and no proper preplanning of each year's activity seems to have been done in those years. Otherwise the results would have been better." The Committee hope that suitable corrective measures would be taken to put the Organisation on an efficient footing.

5.26. The number of rigs which individually suffered loss of operational days in excess of 120 days in a year during the period 1966-67 to 1969-70 was 14 due to off-season, 9 due to waiting, 2 due to transit and 8 due to repairs out of 27 rigs employed on an average. Although maximum off-season period is only 3 months in a year the loss

suffered went up to as much as 235 days in one case. The Committee would like Government to examine in detail all such cases of heavy losses of operational days with a view to take effective remedial action.

5.27. The Committee cannot find any justification for the long waiting for site, material and equipment, staff and last but not the least instructions and decision from higher officers. A need for better planning and coordination is clearly indicated.

5.28. Now that the jurisdiction of each field division has been clearly defined, the Committee trust that there would be no more of criss-cross movements of rigs involving avoidable loss of time and shifting charges as in the past.

5.29. Admittedly repairs were taking place and rigs were moved during the working season thereby increasing the total loss of operational days. The Committee would suggest that repairs and movement of rigs should be done as far as possible during off-season.

5.30. A comparison of performance of rigs in 1966-67 with that in 1968-69 would show that with almost twice the number of operational days the footage drilled was only marginally more in 1966-67. From the rig-wise details of drilling furnished by the Ministry, the Committee find that there is scope for better performance. The Committee suggest that norms for drilling operations in terms of average footage per rig per day may be evolved in the interest of keeping a contemporaneous watch over performance and taking remedial measures, as necessary.

5.31. An important deficiency in the Organisation is the lack of adequate trained personnel which is understandably responsible for the efficiency being at a low ebb. The Committee note that some of the better men left the Organisation because there was uncertainty about its permanent set up. The Committee would like Government to take a firm decision about the role, status and functioning of the Organisation at an early date as recommended elsewhere in this Report.

5.32. It is surprising to learn that this important Organisation was run with retired or inexperienced personnel which the Committee strongly deprecate. What is more surprising is that the Organisation was going without a Chief Engineer from September, 1968. The Committee would urge that the appointment to the post should be made soon. Sustained measures should also be taken to train staff in exploratory and drilling work in the interest of improving performance.

VI COST OF OPERATION

6.1. According to the Audit para the regular complement of staff per rig was maintained when the rigs were under repair or were not in operation due to miscellaneous reasons. The average expenditure per footage drilled increased from Rs. 16.87 in 1965-66 to Rs. 43.75 in 1968-69. The expenditure incurred on staff and maintenance of rigs for the operational days avoidably lost during the three years ended with 1968-69 would run into several lakhs of rupees.

6.2. The Ministry intimated that each drilling rig had the following staff:

1. Driller Incharge	1	
2. Driller-cum-mechanics	2	
3. ADCM's	3	
4. Field Supervisor	1	
5. Assistant Mechanic	1	
6. H. T. Driver	1	
7. M. T. Drivers	2	
8. Compressor Driver	1	for three rigs
9. Mate.	1	
10. Chowkidar	1	

6.3. The Committee desired to know the reason for the abnormal increase in the cost of drilling. The representative of the Ministry stated that apart from the shifting of the headquarters of three divisions during 1968-69, laxity in the working also contributed to the increase in cost during 1968-69. He added: "In the last year new rigs were obtained and other steps were taken to improve matters in the ETO. And lot of energy was put into this and we have been able to put down (the cost) to Rs. 17.29 during the last year. It is nearly the base figure and is much lower than the earlier figures. In 1959-60 it was Rs. 20.41, next year Rs. 20.54, 1961-62, Rs. 16.87, 1962-63, Rs. 15.38 and next year it rose again. We are now concentrating and trying to get the best out of our machines and men.

6.4. The cost per footage drilled during the years 1965-66 to 1968-69 was as follows:

Year	Cost per foot (Rs.)
1965-66	16.87
1966-67	33.08
1967-68	41.89
1968-69	43.75

6.5. Asked whether there was any machinery in the Ministry to keep watch on the cost, the Secretary, Department of Agriculture stated: "What I submitted earlier was that the arrangements for reviewing the various aspects of the matter have got to improve. Profiting by what has been pointed out by the Audit and what the Technical Committee also advised us, I hope, Sir, we have been able to strengthen organisation and make necessary arrangements."

6.6. The Committee enquired whether any comparison of the cost was made with that of private sector. The witness stated that ETO's work could not be compared with that of any private operator as it was so different in nature. The conditions in which it operated were such that no private firm could take up the work.

6.7. Asked whether some State Governments had taken up working of sinking production wells, the witness said: "Some of the States undertake production drilling but that also of comparatively shallow wells. They do not have rigs which can go down to 2000' as we have. We do such work as cannot be done by private contractors or by the State Government themselves."

6.8. The Committee were further informed that the State Governments were encouraged to have their own production arrangements as far as possible. As regards comparison of cost of production drilling with that of the State, the Secretary, Department of Agriculture, stated that the analysis would be made. The Committee then drew his attention to the 130th Report of the Estimates Committee 1960-61 wherein they had suggested a comparative study of the cost of the ETO and that of other organisations in order to ensure that as the work progressed there was a corresponding decrease in cost. Government had intimated the Estimates Committee in 1962 that attempts were being made to collect the details of cost from various organisations. The witness stated: "I only express regret that this recommendation had not been followed. While I ensure

that the comparison is made and we will in the comparison of course point out differing circumstances and we will submit this paper as early as we can."

6.9. The Ministry subsequently submitted a note in which the following information was given:

"Comparative costs of construction of tubewells by the ETO, State Governments and private agencies, as per the information collected so far, are as under:

(a) *Rajasthan* :

- | | |
|---|-------------------|
| (i) The rate of State Govt. (Rajasthan Groundwater Board) | Rs. 98,- per foot |
| (ii) The rate of E.T.O. | Rs. 80 -per foot |

(b) *Bihar* :

- | | |
|--------------------------|-------------------|
| (i) Rate of M. s. Ingras | Rs. 34 - per foot |
| (ii) Rate of ETO | Rs. 19 - per foot |

(c) *U. P.*

- | | |
|-----------------------------|-------------------|
| (i) The rate of State Govt. | Rs. 23,-per foot |
| (ii) Rate of ETO | Rs. 19 -per foot. |

- (d) Recently, the Tarai Development Corporation had invited open tenders for the construction of about 250 tubewells in the Tarai region of Nainital, Bareilly and Rampur district in U.P. They have decided to award the work to ETO. It is evident that the rate of ETO is lower than the private agencies in this case also."

6.10. During evidence the witness replied to a question thus: ".....where we drill at the behest of the State Government in an area chosen by them, we charge them not only for the material but also for the establishment and overheads. And the fact that we have a larger demand from the States than we can handle shows that the States do not consider our rates to be high. There is, however, lack of competition in this field. So far there are few private firms which have similar rigs and can undertake similar work. It may be that if such firms come up, their charges may be lesser than ours. But, at the moment, this is the position."

6.11. To another question, the witness replied: "What we are doing is that we are encouraging more private parties to come up. During the last four years or so, licences have been given to a number of private people to manufacture rigs in collaboration with the original manufacturers from abroad. And we have also asked the commercial banks and the cooperative banks to give loans to such people who may be interested in setting up their own rig fleets and work on a commercial basis. We are trying to see that such

people come up for well drilling. When they come up, then the monopoly of the State organisations or even of the Government of India will be broken and we will have more realistic rates."

6.12. The Committee note that the cost per footage drilled suddenly increased from Rs. 16.87 in 1965-66 to Rs. 33.08 in 1966-67 and further went up to Rs. 43.75 in 1968-69. The Committee were informed that as a result of various steps taken in 1969-70 including acquisition of new rigs the cost could be reduced to Rs. 17.29. In the opinion of the Committee, there should be some arrangement in the Ministry in future to have a periodical review of various aspects of the working of the Organisation.

6.13. The Committee understand that the ETO holds a virtual monopoly of drilling in difficult areas. As there is not as yet any effective competitor in the field, the Committee feel that there should be a stricter self-imposed control on cost.

VII

MACHINERY & EQUIPMENT

7.1. In chapter IX of its report, the Technical Team has dealt with the defects/deficiencies in regard to maintenance of machinery and equipment. Important points brought out by the Team in addition to those mentioned in the Audit para were as follows:

- (1) Records regarding the operation, maintenance and servicing of the drilling rigs and the ancillary equipment were by and large scanty.
- (2) Day-to-day details of consumption of fuel oils and lubricants for engine/equipment-wise in proportion to the hours worked by each one of them are not being maintained and in the absence of such details, it is well high impossible to check or keep an eye on their performance.
- (3) While no separate log books for the rig engines, and pumps, electric generating sets and other ancillary equipment are being maintained, either in the Divisions or at the drill sites, records kept at some of the drill sites were found to be generally highly incomplete. Moreover, these do not give all the data necessary for keeping a proper check on the working and performance of the machinery and equipment and for day-to-day reference in connection with the servicing, maintenance, minor and major repairs.
- (4) Under the present system, the entire machinery, equipment and transport vehicles in all the Divisions are brought back to the Divisional Headquarters for carrying out off-season repairs, both major and minor. On the other hand, there is neither any workshop worth the name at any of the Divisional Headquarters nor do they have any machine tools whatsoever and all the repair jobs have, therefore, to be got done from outside agencies in the town, which certainly is not a very dependent and satisfactory arrangement. The situation is further aggravated by the fact that even though the ETO is a highly mechanised Organisation, till to date, they do not have any Central Workshop anywhere to cater to the needs

of the various Field Divisions. The situation so far as the upkeep and repairs to the machinery and equipment is concerned can therefore be best left to the imagination.

- (5) It was observed that neither any assessment of the repairs involved are made at any stage nor any work order/job orders are opened for this purpose. The decision to undertake repairs on any machine or equipment are by and large taken at lower levels and that too without proper inspection and detailed measurements of the various worn out parts. In fact, no records/details about the wear etc. are being maintained with a view to assess the precise quantum of repairs involved and spares and assemblies required for renewal.
- (6) It may be mentioned that not only most of machinery, equipment and vehicles are of imported types, these are of variety of makes and models. It seems that the machinery and equipment have all along been purchased completely ignoring the question of 'standardisation'. In view of this and that the country is facing acute shortage of foreign exchange, it is highly problematic to import parts and assemblies for all these items of different makes and models with the result that quite a number of rigs, transport vehicles and air compressors were found to be lying off the road for quite some time.
- (7) Presently, there is no proper system of planning and provisioning, either spare parts, stores and the equipment, with the result that on account of the delay in the procurement of spare parts required from time to time, the percentage of availability of 'operation worthy' machinery, equipment and transport vehicles is rather very low.

7.2. The Ministry furnished a statement showing the reasons for each of the defects/deficiencies noticed by the Technical Team and the action taken to improve the position which is appended to this Report vide Appendix VII.

7.3. From the statement furnished by the Ministry, it is seen that the divisions were not fully equipped with necessary machines, tools etc. required for major repairs and proper maintenance of servicing in the field, all the rig units were not self-sufficient in the matter of supply and storage of H.S.D., petrol, lubricants, there was no proper and detailed inventory of machinery, equipment and transport vehicles, the need for a central workshop was felt all the

time and the proposal for the establishment thereof had been sent to Government, spares were not available for the imported equipments and that action was being taken as follows:

"The Oil and Natural Gas Commission was being contacted to undertake repairs in the workshops. Schedule of preventive maintenance and other records had since been introduced on the pattern prevailing in the Oil and Natural Gas Commission. Inventory of machinery was being prepared and the standardisation was being carried out."

7.4. As regards present workshop facilities available with the Organisation, the Ministry explained in a note as follows:

"Each Division has got a small workshop. Due to inadequate machinery in these workshops only day-to-day repair and servicing can be attended to. Repairs like turning, boring, crankshaft grinding, valve seal refacing, calibration of fuel pumps and fuel injectors work cannot be undertaken in these workshops. Minor repairs are carried out at the drilling sites where an Assistant Mechanic is available. The off-season repairs are carried out in the Divisional workshops where all the mechanics and Assistant Mechanics of the Division are pooled up during the off-season. The machinery and equipment are completely overhauled in the divisional workshop. Imported spares if available in the Divisional stores are taken out and replaced. In cases where these are not available in the stores as also in the country there is no other alternative but to arrange its fabrication, turning, reboring, grinding, refacing etc. after showing the sample to local manufacturers. Divisional workshops are, however, being reorganised and strengthened. We are also contacting ONGC to ascertain as to whether they can undertake repairs of our rigs, equipment etc. in their workshops."

7.5. During evidence the Committee wanted to know the Government's decision on the establishment of a Central workshop for the ETO. The representative of the Ministry stated: "We considered this matter very carefully. This Technical Committee was composed of officers of the ONGC and we found that even they did not have a central workshop. There are certain difficulties in having a central workshop. Our rigs are spread out in large areas and so far we have been getting the rigs repairs locally. What we are now exploring is the possibility of having permanent arrangements with

certain Government workshops. There are certain major workshops. In Varanasi, for instance, there is the railway workshop; near Ahmedabad there is the ONGC workshop at Baroda. We have now given up the idea of having our own workshop. We have not accepted this recommendations because it will be very difficult to transport those heavy machines by train."

7.6 The Committee pointed out that different organisations were working under different Ministries and that everywhere there was a problem as to how to arrange for spares and how to standardise things. The Committee wanted to know whether any thought was given to this problem at the Government level. The witness stated:

"We have decided to have now a Central Inventory of spares and to keep certain strategic spares under central control. A list of such spares is being drawn up and although no such arrangement existed in the past, now we propose to keep stocks of these spares according to certain criteria to be worked out. We may keep some spares at headquarters and some other spares in the Divisions but shall have a Central inventory control which will show us which spares are available where so that if a certain Division needs the spares which are not available with it the Central office would be able to give suitable directions and supply them."

7.7. As regards centralised inventory for the country as a whole, the Secretary, Department of Agriculture, had the following to say:

"Coordination with the States proves to be very difficult in practice because an attempt to have a centralised inventory with regard to the machinery used in the River Valley Projects was attempted by the Central Water and Power Commission and it was found in practice that when the time came to draw upon that inventory maintained in a particular State, there have been invariable delays in either getting the spares or in getting them in time. So, one could not be too sure as to whether the kind of centralised organisation would be found a workable proposition. But so far as we are concerned we are taking these steps to draw up an inventory and to keep them both centrally and dispersed at regional headquarters."

7.8. The Technical Team observed that 'at present, there is no Organisation whatsoever at the headquarters for the proper planning and provisioning of spare parts, stores and equipment with the result that this work is being generally done in a highly haphazard manner, on account of which, there are serious delays in the procurement of spare parts, components and assemblies, particularly those which have to be necessarily imported. In fact, there is hardly any system of planning and provisioning even for the spare parts which are readily available indigenously.'

7.9. The Team further added: "Since most of the machinery and equipment in use with the ETO are of imported type, procurement of certain spare parts, components and assemblies from abroad may be inevitable for some time to come. The Planning and provisioning Section at the headquarters should, however, endeavour to embark progressively on an earnest campaign for 'Import Substitution' by exploring the possibility of getting as many parts, components and assemblies manufactured indigenously as possible after preparing detailed specifications and drawings. In this connection, it may be mentioned that similar campaign recently launched by the O.N.G. Commission has met with great success and "Import Substitution' of quite a large number of items of spare parts for drilling rigs and other imported equipment has already been satisfactorily established. Once this is done in the ETO also, it will go a long way in minimising the down-time in the field on account of non-availability of spare parts."

7.10. During evidence the Committee enquired whether rigs could not be procured indigenously. The witness stated: "In fact, Ranchi has been licensed for heavy engineering. They are manufacturing well boring rigs under a Russian licence. There is no shortage of rigs at the moment under indigenous manufacture. We are largely independent now except for a few very sophisticated types."

7.11. An Executive Engineer of the Organisation was recently deputed to undertake a survey of all the existing machines and equipment with a view to taking speedy action for the disposal of all such items as have already outlived their useful life and or beyond economical repairs.

7.12. From the material placed before them, the Committee have come to the inescapable conclusion that there has so far been no control in the Organisation on procurement, maintenance and repair of machinery and equipment. The Technical Team has brought out

a number of vital deficiencies in this regard. While the Committee hope that Government will attend to those deficiencies expeditiously, they would in particular like the following to be considered in right earnest:—

- (i) There should be a proper planning and provisioning of spares in the Organisation and the headquarters should, in particular, endeavour to embark on 'Import substitution' in consultation with Ministry of Industrial Development and the DGTD. Indigenous rigs should be procured as far as possible to meet future requirements; and
- (ii) The Organisation should attempt to 'standardise' the machinery and equipment progressively in future in order to avoid difficulties in procuring spare parts and assemblies for different makes and models.

7.13. The Committee understand that an Executive Engineers has been deputed to undertake a survey of all the existing machines and equipment with a view to taking action for the disposal of all such items as have already outlived their useful life and/or are beyond economical repairs. The Committee hope that this work would be completed expeditiously and replenishments wherever necessary would be made with due regard to import substitution and standardisation.

VIII PURCHASE OF DEFECTIVE RIGS

Audit Paragraph

8.1. For purchase of 9 imported rigs of U.S. make, the Director General, Supplies and Disposals, placed in May, 1968, on behalf of Exploratory Tube-wells Organisation, a contract with a firm at a total cost of Rs. 76.46 lakhs. The rigs were received by the Organisation during January-February, 1969. After assembling them with the assistance of the servicing engineers of the supplier and after getting the defects rectified by the supplier, the rigs were despatched to various sites, erected and put into operation between April and December, 1969. Apart from the delay in utilisation of the rigs, their adequate utilisation was not possible in view of large number of defects noticed (after erection) by the Organisation and reported in July 1969 to the Ministry for discussion in the committee which had recommended purchase of the rigs.

8.2. The contract with the firm provided that the latter would train at its cost four engineers of the indenter for the four weeks each at the principals' works in U.S.A. but the facility of training has not been availed of as no engineer has so far (December 1969) been deputed by the Organisation.

[Paragraph 36(B) of Audit Report (Civil), 1970.]

8.3. The Committee drew attention of the witness to the purchase of 9 defective rigs at the cost of Rs. 76.46 lakhs mentioned in the Audit paragraph. The witness explained: "There were not defects as such, because the rigs were received in knock down condition and they had to be assembled."

8.4. The Committee wanted to know whether tenders were invited for the purchase. In a note submitted to the Committee, the Ministry stated that initially it was proposed to procure 15 drilling rigs from the USA with spares, accessories etc. under USAID-Project loan which was available. The Department of Economic Affairs on the advice of the Associated Finance agreed to the procurement of 10 rigs only subject to fresh clearance from the indigenous angle from the Directorate General of Technical Development. The DGTD, however, cleared import of 9 rigs only—8 Direct Rotary rigs and 1 H.D. Percussion rig. DGS&D was accordingly asked to

procure these 9 rigs. There were different tenders both for Direct circulation Rotary and Heavy Duty Percussion Rigs separately. Accordingly to the job specifications of the equipment and tender analysis the USA rigs offered by M/s.....were considered most suitable for the job requirements of the ETO and thus preferred even though their quotations were not the lowest.

8.5. To a question during evidence as to whether the rigs were inspected before despatch, the witness answered in the negative and added that the condition of the order was that they would be inspected on arrival in India. Asked whether the DGS&D consulted the ETO before waiving the prior inspection, the witness stated that they were not consulted. In the written note submitted to the Committee, the Ministry explained that it was specified in the indent that the "material would be inspected by the indenter or his representative at works before despatch". It was, however, indicated in the A T (Acceptance of Tender) which was issued by the DGS&D that the "purchaser has no intention of arranging inspection at the manufacturer's works, the manufacturer may proceed with the normal factory tests and forward their certified copies of these tests in triplicate alongwith their bills for payment." This was as per the standard procedure followed by DGS&D in all such cases. When the A T was placed there was no arrangement by DGS&D of their own for inspection of the stores in USA before despatch. Such an arrangement had been considered redundant in the past for the reason that the amount of expenditure in retaining staff would be quite heavy and would not be commensurate with the defective supply, if any, reported. In this case the contract was covered by guarantee clause which clearly mentioned that the stores would be free from defects in design, material and workmanship. The contractor guaranteed successful operation of the apparatus and was liable to correct any defects which might appear within a period of one year from the date of its putting into commercial use but not beyond 36 months after the date of shipment. The drilling rigs were received in January-February, 1969. During the course of their assembly, the ETO, however, observed certain defects therein. The defects were trifling and with necessary modifications, adjustments etc. according to the requirement of the ETO carried out at their cost by M/s..... There had not been any operational difficulty. All the rigs were working satisfactorily.

8.6. During evidence, the witness stated that "the trouble arose because in the meanwhile the design of this rig had changed and our engineers, used to the old design, saw in every departure from the old design a defect. All the defects pointed out were withdrawn after discussion with the representatives of the firm." Explaining

further he said: "The old failing rigs had a much bigger space to sit on and work. Our engineers were used to that roomy place, but in these new rigs the working table was reduced in area. This is actually the most important defect noticed by our engineers, but after a little while they got used to working the rig. This is an example of the most important defect. Then, there was the wrong location of the hand break. It was readjusted on the right side, although it was on the left when it came. Then there was only one pulley as against two. They supplied another pulley."

8.7. The Committee desired to know whether any time was lost in getting the defects rectified. The witness stated that no time was wasted and added by way of illustration: "The first rig on the list was received at Faridabad which is the headquarters of the ETO on 23rd February, 1969. It was despatched to the Division on the 25th February, 1969 and taken to the site on 1st April and started working on the 16th April." According to him the rigs were working satisfactorily.

8.8. Thereupon the Committee drew the attention of the witness to the observation contained in the Audit paragraph that "apart from the delay in utilisation of the rigs, their adequate utilisation was not possible in view of large number of defects noticed (after erection by the Organisation) and reported in July, 1969." The witness stated: "Apart from the defects which were removed by the firm, the firm had given an undertaking that they will run these rigs—erect them and operate them for the first few holes at the site and they will look after them for about one year. We pointed out these defects: the firm did come forward and sent their Indian engineers, brought these new replacements which they had suggested and carried out the adjustments and we were then quite satisfied that they were able to give the rigs to us in the perfect working conditions and that is why we were able to achieve the targets which could not have been possible if the rigs had been defective."

8.9. As regards delay in erection of the rigs, the witness admitted that "some delay certainly took place". He said that "all the rigs were received during January-February, 1969 and almost all of them started their operations within three to four months' time that is around July."

8.10. The Committee were informed that four engineers would be sent for four weeks' training at the Principal's Works in U.S.A. a little later. Asked why they were not sent earlier, the witness stated that the Organisation did not have too many engineers and that two or three had been sent for training under USAID. Asked

about the need for sending the Engineers for training long after the arrival of the rigs, the Secretary, Department of Agriculture stated: "The training is useful. The need which arises will be when the machines get older. . . . Suppose there is a need of major overhaul these technical hands can do the work." As regards the cost of training it was stated that "The agreement provides to bear the cost of four weeks journey and so it is not good to turn down such an offer. . . . We bear their salary but the entire other expenditure is their's."

8.11. The Committee note that the Exploratory Tubewells Organisation had referred the defects noticed to the Ministry for discussion in the departmental committee which had recommended purchase of the rigs. The Committee would like to know the outcome of the discussion.

8.12. During evidence the Committee were informed that "some delay certainly took place in erection of the rigs." The Committee would like to know whether the liability of the firm to pay compensation for the loss sustained by Government due to delay in the erection of the rigs was examined.

8.13. As regards sending the engineers for training at the Principal's Works in USA, the Committee cannot help feeling that they should have been sent before the rigs had been received in India especially in view of the fact that the rigs imported were of new design with which the engineers in the ETO were not familiar.

NEW DELHI;
July 5, 1971
Asadha 14, 1893 (Saka).

ERA SEZHIAN,
Chairman.
Public Accounts Committee.

APPENDIX I
(Para 31 of the Report)
ABSTRACT
Statewise progress of Work done since 1955-56 to 1969-70

State	No. of wells drilled		No. of wells proved successful		No. of wells handed over		Remarks
	Exp.	Dep.	Exp.	Dep.	Exp.	*Dep.	
1	2	3	4	5	6	7	8
Andhra Pradesh	40+7(OH)	..	24	..	11	..	
Assam	19	2	17	2	17	2	*All the deposit wells are handed over immediately on its completion. Formal handing over reports are, however, received very late and as such actual position State-wise, cannot be indicated at this stage.
Bihar	29+1	3+2	13	304	12	..	
Delhi . . . . .	..	61	..	47	..	..
Gujarat	93+1	159+3 (OH)	23	138	22	..	1. Total No. of wells drilled (including UNDP & Netab) Exp. Dep. = 687+76 (OH) 1312
Haryana Punjab	84+4	10	25	5	8	5	
Kerala	5	..	1	..	1	..	
M.P.	56	22	31	20	31	..	2. Total No. of wells proved successful Exp. Dep. = 316 1076
Madras	60	4	31	1	28	1	
Maharashtra	32	23	2	17	2	..	3. No. of wells handed over Exp. Dep. = 251 *
Mysore	4	..	..	..	..	..
Orissa	33	..	19	..	19	..	
Rajasthan	94	313	20	206+11 (OH)	19	..	

1	2	3	4	5	6	7	8
U. P.	57+5(OH)	235+9(OH)	45	218+8(OH)	34	..	..
W. Bengal	60	64	50	56	47	..	..
J & K	6+2(OH)	..	5	..	..	..	..
UNDP (Raj)	15+56	..	10	..	..	..	..
NETAB (Bihar)	..	65	..	38	..	..	11
TOTAL	687+76	1300+12 (OH)	316	1052+24 (OH)	251	..	..

1st Project

State	1955-56		1956-57		1957-58		1958-59		Remarks				
	Target	Achievements		Target	Achievements		Target	Achievements					
		Exp.	Dep.		Exp.	Dep.		Exp.		Dep.	Exp.	Dep.	
1. Madhya Pradesh	30	30	..	..	..	..	..	..	..	..	..	..
2. Gujarat	9	9	..	10	9	..	..	1*	..	*Spillover
3. Maharashtra	32	31	..	..	1*	..	..	..	..	..
4. Madras	40	10	..	..	28*	..	..	2*	..	..
5. Rajasthan	10	7	..	..	3	..	..	..	..	..
6. U. P.	39	10	..	..	15	..	..
7. West Bengal	37	24	..	..
8. Kerala	5	5	..	..	..	..	..
9. Bihar	16	15	..	..	1	..	..
10. A. P.	15	15	..	..
11. Orissa	14	14	..	..
12. Punjab	33	23	..	..	15	..	..
13. Assam	15	..	..	..
TOTAL	30	30	..	91	57	..	108	95	..	81	87	..	..

ABSTRACT

Target	310
Achievement	269

IInd Project

State	1959-60				1960-61			
	Target		Achievements		Target		Achievements	
	Exp.	Dep.	Exp.	Dep.	Exp.	Dep.	Exp.	Dep.
1. Gujarat	32	..	21	..	18	..	20	..
2. Rajasthan	18	11	6	..	14	..	12	2
3. U. P.	10	3	8	..	..	..	4	..
4. W. Bengal	24	50	13	..	..	..	13	6
5. Bihar . . . . .	..	..	..	..	20	..	1	..
6. Punjab . . . . .	..	..	..	..	..	1	..	1
7. Assam	15	..	9	..	10	..	5	..
8. Delhi . . . . .	..	..	..	..	..	4	..	1
TOTAL	99	64	57	..	62	5	55	10

ABSTRACT

Target	Exp.	Dep.	= 230
	161	69	
Achievements	112	10	= 122
Exp= Exploratory			
Dep= Deposit			

III Plan

	1961-62		1962-63				1963-64				1964-65				1965-66					
	Target		Achievement		Target		Achievement		Target		Achievement		Target		Achievement		Target		Achievement	
	Exp.	Dep.	Exp.	Dep.	Exp.	Dep.	Exp.	Dep.	Exp.	Dep.	Exp.	Dep.	Exp.	Dep.	Exp.	Dep.	Exp.	Dep.	Exp.	Dep.
1. Gujarat	32	..	25	..	8	..	4	..	..	..	9	..	50	..	47	..	44	..	49	..
2. Rajasthan	91	15	17	15	..	..	33	4+8+3	..	6	16	2	..	125	..	85	..	165	..	127
3. U. P.	5	6	3	6	..	65	3	62	11	46	..	13	10	..	1	12	5	25	2	13
4. West Bengal	7	64	2	43	24	1	5	13	19	..	..	2	..	..	..	..	..	..	..	..
5. H. P.	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5	..	..	..
6. Delhi	..	5	..	5	..	35	..	8	..	..	..	17	..	..	..	1	..	..	..	16
7. Assam	..	..	5	..	..	2	..	2	..	..	..	..	..	..	..	..	..	..	..	..
8. M. P.	..	..	..	..	25	21	15	17	..	..	10	4	..	..	..	1	..	..	..	..
9. Orissa	..	..	..	..	24	20	4	..	..	..	12	..	3	..	3	..	..	..	..	..
10. Bihar	..	..	..	..	10	..	4	..	10	23	5	9	..	75	..	63	..	61	1	52
11. Punjab	..	..	..	..	8	5	6	5	32	..	8	2	2	..	2	..	..	..	..	..
12. Madras	..	..	..	..	..	..	..	..	25	4	10	4	4	..	4	..	..	..	..	..
13. Mysore	..	..	..	..	..	..	..	..	5	..	4	..	..	..	..	..	..	..	..	..
14. Maharashtra	..	..	..	..	..	..	..	..	..	9	..	5	..	..	..	3	..	..	..	..
TOTAL	137	90	52	69	99	149	74	122	102	88	65	67	19	250	10	212	10	295	3	257

IV Plan

	1966-67		1967-68				1968-69				1969-70					
	Target		Achievement		Target		Achievement		Target		Achievement		Target		Achievement	
	Exp.	Dep.	Exp.	Dep.	Exp.	Dep.	Exp.	Dep.	Exp.	Dep.	Exp.	Dep.	Exp.	Dep.	Exp.	Dep.
1. Gujarat	20	..	20	14	30	..	3	6+3	18	1	18	12+4	10	4	16	
2. Rajasthan	56	..	42	..	29	..	26	..	..	..	..	..	30	..	2	
3. Bihar	51	..	78	..	91	..	86	7+2 (OH)	72	..	41	7+2	40	..	13	
4. U. P.	13	..	35	3	47	2	26	0+20	20	1	14+1	6+2 (OH)	89	8+5	62	
5. Delhi	8	..	8	..	..	..	5	..	..	..	..	..	..	..	..
6. Maharashtra	13	..	6	..	8	..	9	..	..	..	..	..	..	..	..
7. Haryana	..	..	..	..	..	..	..	13+4	..	11+3	1	12+4	..	15+1	..	
8. Punjab	..	..	..	..	..	..	..	5+2	..	..	..	12+4	..	4	..	
9. A. P.	..	..	..	..	..	..	..	18+5	..	7	..	28+8	..	18+7	..	
10. Tamil Nadu	..	..	..	..	..	..	..	10+4	..	..	..	13+4	..	6	..	
11. J & K	..	..	..	..	..	..	..	5+2	..	3	..	5+2	..	3+2	..	
12. M. P.	..	..	..	..	..	..	..	8+3	..	..	..	6+2	..	2+1	..	
13. W. Bengal	..	..	..	..	..	..	..	..	..	..	..	13+4	..	3	..	
14. Netab Project (Bihar)	..	..	..	..	..	..	..	..	50	..	31	..	26	..	34	
15. UNDP (Raj.)	..	..	..	..	..	..	..	40+80 (OH)	..	5+32	..	21+24	..	10+24	..	
TOTAL	161	..	189	17	205	2	155	112+125	160	27+36	106	135+70	195	73+40	127	

APPENDIX II

(Para 5.12 of the Report)

Rig-wise details
1966-67

Sl. No.	Rig.	Operation days	Off Season	Transit	Repairs	Waiting
1	F.D. I.	234	37	34	7	53
2	F.D. II	221	26	21	30	67
3	F.D. III	170	134	22	6	33
4	F.D. IV	198	122	..	12	33
5	F.D. V	141	91	66	3	64
6	F. D. VI	174	..	95	12	84
7	F.D. VII	258	73	..	5	29
8	F.D. VIII	193	63	52	9	48
9	Joy	290	1	..	6	68
10	71-Star I	306	1	..	19	39
11	71-Star II	267	..	..	60	38
12	71-Star III	231	1	..	6	127
13	71-Star IV	286	4	..	15	60
14	71-Star V	276	17	..	25	47
15	71-Star VI	305	1	..	11	48
16	72-Combination	99	189	..	17	60
17	22-W Percussion	242	3	..	8	112
18	22-W Percussion	294	..	..	24	47
19	33-W —Do—	190	..	..	35	140
20	Failing I	172	71	31	28	63
21	Failing II	258	70	..	15	22
22	Failing 1500	276	..	..	56	33
23	Failing Sr. (2500)	226	65	..	29	45
24	W.W. I	235	100	..	6	24
25	W.W. II	186	113	..	1	65
26	W.W. III	223	112	..	8	22
27	Frank Reverse	181	114	..	18	52
		6132	1408	331	471	1523

APPENDIX III
(Para 5.12 of the Report)

Rig-wise Details

1967-68

Sl. No.	Rig	Operation days	Off Season	Transit	Repairs	Waiting
1	F.D. I	83	169	51	8	55
2	F.D. II	189	124	..	6	47
3	F.D. III	96	163	3	17	87
4	F.D. IV	146	..	..	127	93
5	F. D. V	242	10	26	14	74
6	F.D. VI	212	72	31	4	47
7	F.D. VII	227	7	19	14	99
8	F.D. VIII	142	147	11	10	56
9	Joy	223	64	..	18	61
10	W.W. Direct	118	13	..	31+107 idle	31
11	71 Star I	213	4	..	19	13+117 waiting for Handing to State Govt.
12	71 Star II	218	1	..	87	60
13	71 Star III	253	98	..	7	8
14	71 Star IV	328	8	..	7	23
15	71 Star V	235	113	..	12	6
16	71 Star VI	327	2	..	18	19
17	72 Star Combination	232	4	..	29	51
18	22-W Percussion I	126	..	..	211	29
19	22-W Percussion	247	30	29	9	51
20	33-W Percussion	165	73	29	11	88
21	Failing I	249	..	4	26	87
22	Failing II	300	..	..	28	38

Sl. No.	Rig.	Operation days	Off Season	Transit	Repairs	Waiting
23	Failing—S 1500	223	2	5	46	90
24	Failing Sr. (2500)	180	65	6	10	105
25	W.W. I	214	93	..	1	58
26	W.W. II	183	117	7	5	54
27	W.W. III	217	88	..	3	58
28	Frank Reverse	181	112	14	6	53
		5819	1579	235	891	1658

APPENDIX IV
Para 5.12 of the Report)

Rig-wise Details
1968-69

Sl. No.	Rig	Operation days	Off-Season	Transit	Repairs	Waiting
1	F.D. I	48	..	..	122	195
2	F.D. II	165	92	..	17	91
3	F.D. III	193	91	..	70	11
4	F.D. IV	208	59	..	89	9
5	F. D. V	89	..	42	14	220
6	F.D. VI	122	..	90	1	152
7	F.D. VII	156	..	..	207	2
8	F.D. VIII	144	129	..	32	60
9	71 SSI	40	..	..	9	316
10	71 SS II	16	..	197	150	2
11	71 SS III	172	..	151	2	40
12	71 SS IV	195	93	..	42	35
13	72 SS	142	101	..	52	70
14	22 WI	82	235	..	..	48
15	22 WII	100	164	..	27	74
16	33 W	94	157	..	93	21
17	Failing I	3	146	..	211	5
18	Failing II	137	186	..	14	28
19	Failing 1500	57	176	..	39	93
20	Failing State	211	116	..	17	21
21	W.W. I	184	106	24	9	42
22	W.W. II	202	73	29	..	61
23	W.W. III	203	91	24	6	41
24	F.R. Circulation	232	75	26	4	28
TOTAL		3195	2090	583	1227	1665

APPENDIX V
(Para 5.12 of the Report)

Rig-wise Details
1969-70

Sl. No.	Rig.	Operational days	Holidays	Off season	Transit	Repairs	Waiting
1	F.D. 4	136	35	90	..	69	35
2	F.D. 7	193	32	77	..	34	29
3	Belgium I	161	4	..	..	16	2
4	Belgium II	154	1	..	..	6	..
5	Belgium III	55	..	..	..	..	4
6	F.D. II	199	38	65	..	13	50
7	F.D. VII	111	48	90	..	87	29
8	Wabco III	220	34	..	..	26	85
9	Wabco IV	244	27	..	21	40	33
10	Failing 1500	126	16	90	..	122	11
11	33 Walkerneer	218	46	..	40	40	21
12	71-S.S.I.	238	58	..	..	63	6
13	72 Star Combination	197	29	74	..	38	27
14	F.D. III	152	39	90	..	23	61
15	Wabco II	80	17	52	..	17	2
16	Wabco V	84	9	..	..	9	33
17	Wabco VI	220	14	..	..	37	39
18	Frank Reverse. . . .	232	19	74	..	23	17
19	W.W. I	240	20	73	..	14	18
20	W.W. II	218	25	74	..	20	28
21	W.W. III	91	48	90	..	85	51

Sl. No.	Rig.	Operational days	Holi-days	Off season	Transit	Repairs	Waiting
22	Failing 1500	99	4	90	56	110	6
23	Failing I	206	32	68	..	36	23
24	Failing II	222	27	78	..	14	24
25	F.D. I	126	40	90	..	13	96
26	F.D. V	213	35	63	..	9	45
27	F.D. VI	190	30	..	..	16	129*
28	Wabco VII	92	7	..	..	10	..
29	Wabco VIII	173	14	..	..	4	83
30	Failing 1500	..	..	..	..	..	365*
		4890	748	1328	117	994	1352

*Writing off under consideration.

APPENDIX VI

(Para 5.20 of the Report)

Average footage drilled per Rig per day during the years 1965-66 to 1969-70

Sl. No.	Name of Rig	1965-66	1966-67	1967-68	1968-69	1969-70	Remarks
1	2	3	4	5	6	7	8
1	Frank Direct Rig No. 1	32.46	23.43	35.44	32.17	43.30	
2	Frank Direct Rig No. 2	19.07	22.49	21.79	30.70	48.01	
3	Frank Direct Rig No. 3	21.31	23.76	27.01	29.51	25.18	
4	Frank Direct Rig No. 4	31.32	35.31	12.36	26.91	32.27	
5	Frank Direct Rig No. 5	21.27	28.41	15.01	30.35	5.41	
6	Frank Direct Rig No. 6	24.17	16.41	19.33	31.46	36.08	
7	Frank Direct Rig No. 7	38.52	10.78	10.60	21.90	14.76	
8	Frank Direct Rig No. 8	27.78	32.15	31.87	33.19	32.78	
9	Failing Direct Rig No. 1	..	4.35	5.18	..	..
10	Failing Direct Rig No. 2	..	..	..	20.60	17.15	
11	72-Speed star combination Rig	5.79	5.30	13.51	7.60	9.52	
12	Winter Weiss R.C. Rig No. 1	21.77	15.80	23.34	15.05	17.98	
13	Winter Weiss R. C. Rig No. 2	25.72	9.54	19.56	17.55	19.07	
14	Winter Weiss R.C. Rig No. 3	25.83	12.07	15.74	14.01	11.64	

1	2	3	4	5	6	7	8
15	Frank Reverse Cir Rig	. . .	24.30	12.73	20.30	14.17	17.66
16	22-W Percussion Rig	. . .	..	1.52	..	..	..
17	22-W Percussion Rig	. . .	2.34	..	1.42	..	..
18	33-W Percussion Rig	. . .	6.67	7.11	3.97	0.16	..
19	71- S.S. Percussion Rig No. 1	. . .	00.23	1.19	1.31	2.35	1.62
20	71 S.S. Percussion Rig No. 2	. . .	7.39	..	2.4	..	..
21	71-S.S. Percussion Rig No. 3	. . .	1.47	0.92	2.19	..	..
22	71-S. S. Percussion Rig No. 4	. . .	1.04	0.91	1.36	..	..
23	71-S. S. Percussion Rig No. 5	. . .	1.06	1.43	1.47	1.85	..
24	71-S. S. Percussion Rig No. 6	. . .	1.63	1.31	1.41	..	..
25	Joy Direct Rotary Rig . . . . .	. . . . .	19.33	12.85	9.87	..	..
26	Failing Sr. 2500 . . . . .	. . . . .	18.93	13.14	17.97	..	..
27	Failing Direct 1500 (ETO) . . . . .	. . . . .	17.87	6.65	2.58	11.50	22.85
28	Failing Direct 1500 (State) . . . . .	. . . . .	..	..	..	29.91	..
29	W. W. Direct Rotary Rig (Delhi) . . . . .	. . . . .	..	..	5.77	..	..
30	Mayhew Jr. (Delhi) . . . . .	. . . . .	..	..	..	..	..
31	Wabco 8 . . . . .	. . . . .	..	..	..	..	40.23
32	Wabco 7 . . . . .	. . . . .	..	..	..	..	60.23

33	Wabco	6	.	.	.	.	.	.	..	..	..	..	45'31
34	Wabco	5	.	.	.	.	.	.	..	..	..	..	25'25
35	Wabco	4	.	.	.	.	.	.	..	..	..	..	32'28
36	Wabco	3	.	.	.	.	.	.	..	..	..	..	48'60
37	Wabco	2	.	.	.	.	.	.	..	..	..	..	53'82
38	Balgium	1	.	.	.	.	.	.	..	..	..	..	33'65
39	Balgium	2	.	.	.	.	.	.	..	..	..	..	22'55
40	Balgium	3	.	.	.	.	.	.	..	..	..	..	35'00
41	Walkerneer		.	.	.	.	.	.	..	..	..	..	1'88

APPENDIX VII

(Para 7.2 of the Report)

Replies to queries on para 1 of Chapter IX of the Report of the Technical Team (Para 23)

Observation of the Technical Team	Reason thereto	Action taken to improve the position
1	2	3
<p>1. The standard of servicing and maintenance of the drilling rigs, ancillary equipment like electric generating sets, welding plants, pumps and both the heavy and light transport vehicles was generally found to be very poor and unsatisfactory. Serious neglect of servicing and maintenance of machinery, equipment and transport vehicles is apparently by and large responsible for the progressive deterioration in the operational efficiency of the Organisation.</p>	<p>The Divisions were not fully equipped with necessary machines, tools etc. required for major repairs and proper maintenance and servicing, in the field. The drilling equipment with its ancillary as also the available workshop equipment as recommended by the foreign experts under TCM-Programme were received during 1955-56. With the passage of time the already inadequate repairing instruments went on deteriorating and contributed towards the attributed negligence.</p>	<p>The Oil & Natural Gas Commission is being contacted to undertake our repairs in their Workshop and our own divisional Workshops are being reorganised and strengthened. The Workshops are now equipped with servicing equipment such as grease dispensers, fuel pumps fitted with special filters etc. Other machinery like lathes, power drills, grinding machines and also portable cranes are being introduced. We are obtaining sufficient stock of spare parts and doing away with obsolete and old parts.</p>
<p>2. A random check on the air cleaners of some of the diesel engines of the rigs and the heavy and light transport vehicles revealed that these had not been serviced for quite some time as their oil baths were either found to be without adequate quantity of oil or the oil was highly contaminated with water dust and dirt. This is clearly indicative of the fact that even the air cleaners which are so vital for the continuous supply of clean air into the combustion system are not being serviced regularly and properly.</p>	<p>The rig units of the Organisation are working in desert conditions and in open areas fully exposed to the vagaries of nature.</p>	<p>Instructions already exist for cleaning and oiling properly. However this has again been stressed and proper care is being taken.</p>

3. Neither any schedules of preventive maintenance for the various types and makes of machinery, equipment and transport vehicles etc. have been worked out nor any proper records in this regard are being maintained in any of the field Division or at the drill sites.

Such records were used to be maintained through the Log Books. No specific forms were in practice.

Schedules of preventive maintenance have been introduced on the pattern prevailing in the Oil & Natural Gas Commission. The system is now in vogue for quite some time.

4. Records regarding the operation, maintenance and servicing of the drilling rigs and ancillary equipment were by and large very scanty, even though their continued satisfactory performance has a direct bearing on the overall operational efficiency in the field.

Entries were being made in these Log Books and History Sheets of the respective machinery.

The essential records on the same lines in practice in the Oil & Natural Gas Commission are now being maintained for each and every rig and ancillary equipment.

Day-to-day details of consumption of fuel, oils and lubricants for engine equipment wise in proportion to the hours worked by each one of them are not being maintained and in the absence of such details, it is well-nigh impossible to check or keep an eye on their performance.

Monthly consumption and averages were being worked out in the log book of the equipment itself.

This is now being worked out daily.

6. Charts showing the recommended brands of lubricants for use on the various types of machinery, equipment, transport vehicles and ancillary equipment have not been prepared, either by the Headquarters or any of the Field Divisions. Apparently, it is left to the field staff to choose any of the available lubricants at the sites for topping, renewals.

The lubricants were used in accordance with the recommendations of the manufacturers prescribed in the service manuals available with each machinery.

The recommended brands of lubricants for use on the various types of machinery/equipment have now been consolidated in a chart and available with every unit.

7. Arrangements for the supply and storage of HSD, Petrol and lubricants at the drill sites need to be improved in order to minimise the down-time and to ensure satisfactory performance of the machinery and equipment.

All the rig units were not self-sufficient.

Additional diesel tankers for equipping every rig unit have now been provided.

8. The existing arrangements for dispensing of lubricating oils, both in the base camps and in the fields are highly unsatisfactory. Instead of drawing the lubricants in open cans or buckets directly from the barrels, the latter should either be provided with suitable dispensing pumps or brass taps, through which oils should be drawn into containers provided with lids.
- The Organisation was drawing the lubricants from the barrels which are generally in use and were being received with the lubricants.
- Special pumps fitted with filters to draw fuel and lubricating oils from barrels are being introduced.
9. There is no organised system of carrying out periodical and preventive maintenance of the machinery, equipment, transport vehicles and ancillary equipment in any of the field divisions, on account of which considerable number of avoidable working hours are being regularly lost.
- Periodical heavy repairs and maintenance were regularly being carried out once every year during the rainy season in addition to normal day-to-day repairs.
- With the introduction of preventive maintenance as explained under item 3 above periodical checks are now being carried out. It has also been decided that the SE would inspect at least 24 sites every year and the Executive Engineer of the Division would have to inspect atleast 4 field sites per month.
10. While no separate log books for the rig engines, mud pumps, electric generating sets and other ancillary equipment are being maintained, either in the Division or at the drill sites, records kept at some of the drill sites were found to be highly incomplete. Moreover, these do not give all the data necessary for keeping a proper check on the working and performance of the machinery and equipment and for day-to-day reference in connection with the servicing, maintenance, minor and major repairs.
- The log books were being maintained per rig and not for individual engines mounted on a rig. Log books for other equipment were also maintained separately.
- Separate log books required are now being maintained to give all the necessary data for keeping a proper check on the working and performance and maintenance etc. of individual equipment.
11. Even the records being maintained presently pertaining to the drilling operations are highly incomplete as these do not account
- The present system of records was introduced on the advise of foreign consultants who were initially appointed to train the Indian person-
- These forms have been revised and put in use on the pattern prevailing in the Oil & Natural Gas Commission.

for the entire potential hours of work by the drilling rigs.

nel and had worked with the ETO for about 4 years.

The history sheets being maintained for some of the equipment were also found to be highly incomplete as all the details about the major and minor repairs carried out from time to time are not being regularly incorporated. Moreover, only one form of history sheet has been adopted for the machinery, equipment and vehicles whereas records pertaining to these should invariably be kept in different forms for obvious reasons.

History Sheets were being maintained for each and every equipment. We had only prescribed pattern of history sheets adopted.

Necessary instructions have been issued to the Divisions to strictly adhere to the maintenance of History sheets. This is being followed.

13. On account of the inadequate arrangements for storage of fuels at the sites and the absence of proper means for filtration, by and large, unclean fuel is being used with the result that there is premature failure of fuel pumps and injectors. Since most of the engines are of imported type, on account of the serious difficulties and delay in getting the requisite spare parts for repairs and renovation of the FI pumps and injectors, substantial number of productive hours are being continuously lost.

All the rig units were not self-sufficient.

Additional diesel tankers with special pumps fitted with filters to draw fuel and lubricating oils from barrels are being procured.

14. No proper and detailed inventory of machinery, equipment and transport vehicles etc. are being maintained in any of the field Divisions inspected by the Team.

No such system was in vogue. The condition of equipment was commented upon regularly by the Physical Verification Officer.

A party is going round to all the divisions to prepare inventory of all items is already on the work, preparing the spare parts' consumption report for the past two years, in addition to the inventory of machinery and equipment in the divisions.

15. Even though the ETO deploys a very large number of drilling rigs, allied equipment, transport-vehicles and variety of other ancillary equipment, the Mechanical and Electrical Engineering Services are not well

It has been receiving the attention of the Organisation for a number of years and time and again proposals have been sent to the Government for ameliorating the situation. The Government also on their part recognised these

Proposals to establish a Central Workshop was sent to the Government which is still under consideration. For the time being the Government has taken a decision to strengthen the existing workshop and stabilise

organised, either at the Divisional level or at the drill sites so as to be able to properly upkeep, maintain, service, and organise repairs on the same. Under the present system the entire machinery, equipment and transport vehicles in all the Divisions are brought back to the Divisional Headquarters for carrying out off season repairs, both major and minor. On the other hand, there is neither any workshop worth the name at any of the Divisional Headquarters nor do they have machine tools whatsoever and all the repair jobs have, therefore, to be got done from outside agencies in the town, which certainly is not a very dependent and satisfactory arrangement. The situation is further aggravated by the fact that even though the ETO is a highly mechanised Organisation, till to date, they do not have any Central Workshop anywhere to cater to the needs of the various Field Divisions. The situation so far as to upkeep and repairs to the machinery and equipment is concerned can therefore be best left to the imagination.

difficulties and proposals in this respect were moved further.

the divisions.

16. During the course of the visit of the Team to the various Field Divisions, it was observed that neither any assessment of the repairs involved are made at any stage nor any work order/job-orders are opened for this purpose. The decisions to undertake repairs on any machine or equipment are by and large taken at lower levels and that too without proper inspection and detailed

There was no such practice in this Organisation. The repairs were assessed by the Foreman, Supervisor and arranged after due approval of Divisional Engineers. Only records maintained were the log books, history sheets and Measurement Books. Being imported equipment and due to non-availability of spares in the country, there was no other go but to run to local shops with the dismantled samples

At present practically there are no workshops. As soon as the proposed Central Workshop is established with all the required equipment and staff, the job order/work order system will also be introduced. At present the record of expenditure on repairs is being maintained in the History sheets and the work done recorded in the Measurement Books.

measurements of the various worn out parts. In fact, no records/details about the wear etc. are being maintained with a view to assess the precise quantum of repairs involved and spares and assemblies required for renewal. All the engines of the drilling rigs, vehicles and other ancillary equipment are just dismantled at random for repairs and taken to the local workshops for estimation and obtaining quotations. On the basis of the quotations thus obtained, repairs and replacements are carried out as a matter of course without keeping any proper records for exercising any quality control. Under these circumstances and in the absence of the requisite details, apparently it is well-nigh impossible to keep a check on the precise extent and cost of repairs, as also, the frequency at which these are being got done from outside sources.

for fabricating, turning, boring, grinding, re-facing etc.

17. When the rigs, vehicles and other ancillary equipment on wheels are brought to the base camp for off-season repairs, these are not even properly prompted up for months together resulting in extensive avoidable damage to the tyres and tubes.
18. Inspection reports on the machinery, equipment and transport vehicles sent for repairs are neither made by the users nor at the workshop end.
19. Repairs to the machinery, equipment and vehicles are being generally undertaken rather in haphazard manner without defining priorities and observing any proper procedure.

Due to inadequate equipment in the Workshop of the Divisions.

These are being increased and proper care is now being taken.

The repair work carried out was generally inspected before payment. No inspection reports were being prepared specifically. However if there were defects, the payments were refused or disallowed.

Instructions are being issued for preparation inspection reports also.

Repairs were generally being carried out during off-season or whenever the equipment went out of order.

As soon as the proposed Central Workshop is established and the Divisional workshops are fully equipped rotational repairs are proposed to be carried out.

20. At each of the base camps at the Divisional Headquarters, a large number of broken down engines, vehicles, generating sets, welding plants, pumping sets and air compressors etc. were found to be lying, either awaiting repairs or disposal. In this connection, it may be mentioned that not only most of machinery, equipment and vehicles are of imported types, these are of variety of makes and models. It seems that the machinery and equipment have all along been purchased completely ignoring the question of 'standardisation.' In view of this and that the country is facing acute shortage of foreign exchange it is highly problematic to import parts and assemblies for all these items of different makes and models with the result that quite a number of rigs, transport vehicles and air compressors were found to be lying off the road for quite some time.

21. Whereas a large number of Fuel Injection pumps and injectors are required to be calibrated or repaired periodically, facilities for doing so do not exist with any of Field Divisions. As such, these have always to be sent to the manufacturers, agents or other repairing agencies, usually far away from the Divisional Headquarters for repairs and calibration. On account of the non-availability of the requisite parts, these pumps and injectors remain unrepaired for long periods (in some cases more than a year) resulting in avoidable loss of a large number of productive hours.

The equipment and machinery] procured initially were under the TCM programme with the recommendations of the foreign experts and contractors. Therefore standardisation was rather difficult. Before disposing of un-serviceable equipment, the CPWD Code procedures have to be followed by us and auction arranged by the prescribed authorities.

Due to non-availability of imported spares within the country, these imported items are sent to the big cities where the Workshops of the Sole Distributors are functioning for estimating the repairs and work order issued after obtaining the expenditure sanction from the competent authority, which normally do not fall within the powers of the Executive Engineers.

The Organisation is now carrying out 'standardisation' For e.g. we are equipping the Organisation with a particular type of vehicles (Leyland trucks and Willys light vehicles). Likewise all other items viz generating sets welding plants, pumping sets and air compressors etc. are being procured of the same make and model.

Repairs to the Fuel Injection Pumps and Injectors could be possible if the contemplated Central Workshop is established. For the present the Government decided to defer it for some time.

22. The engines and other equipment, after getting the requisite repairs from outside agencies, are being assembled at the base camps of the Field Divisions. In the absence of relevant data about the tolerance and oil clearance etc. for the different makes and models of engines, their assembly was being carried out rather in a slipshod manner.

23. Even though the ETO is a highly mechanised Organisation and deploys a large number and variety of machinery, equipment and transport vehicles etc. presently, there is no proper system of planning and provisioning, either of spare parts, stores and equipment, with the result that on account of the delay in the procurement of spare parts required from time to time, the percentage of availability of ('operation worthy') machinery, equipment and transport vehicles is rather very low.

24. In all the Field Divisions it was brought to the notice of the Team that the field operations were being adversely affected on account of acute shortage of casing and drill pipes of requisite size. Similarly no tool joints for the drill pipes were reported to be available. This situation is further aggravated by the fact that there are no facilities either with Divisions or at the Headquarters of the Organisation for the repair of casing and drill pipes.

The fleet of rigs earlier received was about 20 years old and many of the rigs were taken over from predecessor Organisation. These did not have any overhauling manuals when received. The workshop staff are thoroughly conversant with such data.

Initially the spare parts were supplied along with the equipment by the suppliers from abroad. On practical use and by passage of time, the fast wearing spares were stored. There was no Central Inventory system in practice.

The drill pipes and casing pipes were procured along with rigs. Due to constant use these were either bent or worn out. These are not available in the country and requires import from abroad. Even after release of foreign exchange, the DGS&D could not procure the tool joints since 1964.

The new rigs and new equipment now received are supplied with necessary operation and servicing manuals which show such details.

Inventory of the spare parts working out the consumption of the past two years have been worked out and the Divisions are being equipped with the required quantity of spare parts.

With the arrival of additional lot of drill pipes with the new rigs the difficulty has been overcome to certain extent.

APPENDIX VIII

Summary of main conclusions/recommendations

S. No.	Para No. of the Report	Ministry/Department concerned	Conclusions/Recommendations
1	2	3	4
1	1.8	Deptt. of Agriculture	<p>The Exploratory Tubewells Organisation set up in 1954 undertook groundwater exploration under Operational Agreement No. 12 with the Technical Cooperation Mission of the Government of U.S.A. The Agreement expired on the 30th June, 1959. At that stage no perspective plan was drawn up covering the period upto which the Organisation was likely to exist, but it was continued on a three-year basis. Indiscriminate movements of field divisions took place in the absence of predetermined areas of operation and planned execution of work. Proper maintenance of machinery and stores from the long range point of view was neglected. Further the Organisation could not attract and hold competent technical men on account of the indefiniteness of its continuance. The continuance of the Organisation in this fashion without proper planning and clear programme was hardly conducive to its efficient working and it is wonder that the overall performance and operational</p>

efficiency suffered badly as noted by the Committee in the succeeding sections of this Report. The Committee would like to know why an assessment of the extent of work to be done with a view to determining the life and character of the Organisation could not be made immediately well before the termination of the Operational Agreement No. 12 in 1959.

3 1.9 -do-

It was only in 1968 that Government recognised the above shortcomings and remitted the problem to a technical team. The Team has recommended *inter alia* grant of permanent status to the Organisation. The Committee desire to know the decision of Government in this regard. The Committee would urge that the location of headquarters of the fifth Division which was stated to be under consideration should be decided upon without further delay.

2

3 2.12 do-

From 1962-63 to 1967-68, there was a progressive decline in the exploratory activities of the Organisation. During evidence the Committee were informed that Government decided in 1961 to take up production drilling also for irrigation purposes as many of the States had no arrangements of their own and that there were years of drought which necessitated sinking of more production wells. While the Committee appreciate the need for production drilling, they are of the opinion that the exploratory work should not have suffered such a serious setback during the period 1965-66 to 1967-68 when there was little or no exploratory drilling for which the Organisation was primarily meant.

1	2	3	4
4	2.13	Deptt. of Agriculture	<p>The Committee learnt that the State Governments are being encouraged to have their own production arrangements and that the Organisation has restored the balance in favour of the exploratory wells since 1969-70. Till the end of 1968 the Organisation covered only an area of 70,000 sq. miles. In view of the vast ground yet to be covered, the Committee hope that the Organisation would concentrate on the exploratory work in future leaving the exploitation to the State Governments and private sector.</p>
5	2.14	-do-	<p>The Organisation, not being equipped to explore hard rock areas has so far been confining its activities to the non-hard rock areas only. As there is an urgent need to assess the groundwater potential in chronic drought affected areas which are mostly hard rock areas, the Committee would suggest that the ETO should be equipped to undertake exploratory work in these areas early.</p>
6	2.15	-do-	<p>Quantitative assessment of groundwater resources is an important aspect of exploration to which the ETO should address itself in the coming years. The Committee would commend the work done by the United Nations Development Project in the Jalore region as a model for the work to be done in the rest of the country.</p>
7	2.16	-do-	<p>The ultimate aim of the ETO is to have a detailed map for the entire country which would show the possibilities of striking water and a quantitative assessment of all the ground water acquires</p>

which would indicate the safe limit for pumping. The Committee would like a perspective plan to be drawn up defining priorities in consultation with the Geological Survey of India and the State Governments with a view to cover the whole country.

8 3-15 -do-

That the Organisation has not given a good account of itself will be evident from the fact that as against a target of 1297 exploratory tubewells, only 763 could be drilled upto the end of 1969-70. The target and achievement in relation to production tubewells were 1662 and 1314 respectively. The Committee would like to know the specific reasons for the failure to reach the targets which must have obviously been fixed from year to year taking into account all the limitations of the Organisation.

9 3-16 -do-

Of the wells drilled only 316 exploratory and 1076 production wells proved to be successful. As the production tubewells are sunk only in proven areas the Committee do not understand the reasons for the failure. As regards exploratory tubewells, the Committee hope that an effective coordination with GSI would be established so that there may not be such large scale failures involving infructuous expenditure.

10 3-17 -do-

Out of the 316 successful exploratory wells sunk, only 251 were handed over to State Governments. The Committee note that some of the tubewells constructed in Rajasthan were not being commissioned and put to use by the State Government. This points to

the need for proper consultation with the States before selecting sites for exploration as they are the ultimate users of the tubewells.

11

3-18

Deptt. of Agriculture

During evidence the Committee were informed that tubewells that yielded 20,000 gallons per hour were at present regarded as successful and handed over to State Governments on payment of cost. The Committee desire that mutually acceptable terms in regard to minimum yield and payment of cost be settled in future between the Organisation and State Governments before undertaking drilling so that the entire cost of wells with yields less than 20,000 gallons per hour may not go waste.

12

3-19

-do-

The Committee are concerned to find that according to the Technical Team "development of wells is not given adequate attention and the job is done rather in a haphazard manner." In some cases wells drilled even in proven areas gave very low discharge as compared to surrounding wells with the result that the work had to be redone at the insistence of State Government at extra cost. The Committee expect that such specific instances of lack of proper care and supervision would be dealt with severely. In this connection the Committee hope that in order to bring down the number of abandoned wells detailed scientific studies would be initiated to evolve proper wells designs for different areas as suggested by the Technical Team.

13 3.10 -do-

The Committee take a serious view of the findings of the Technical Team that "Inspection of field operation both by the senior officers at the headquarters and even the Executive Engineers in the Field Divisions were far too inadequate resulting in poor operational efficiency and overall achievements." The Committee trust that such laxity in supervision will not be allowed to continue.

14 4.10 -do-

The Committee note that till the end of 1968 a potential has been created for additional 12,000 tubewells which may irrigate 2.5 million acres. The system of data collection and data analysis should forthwith get into an assessment of the extent of actual utilisation of the created potential and the resultant increase in agricultural production if the Organisation is to justify its existence.

71

15 5.25 -do-

The Committee are distressed at the abnormal loss of operational days ranging from 37 per cent to 63 per cent of the total working days during the years 1966-67 to 1969-70. Apart from the loss of operational days, the rigs do not appear to have worked at the optimum level of efficiency. All these resulted in poor overall performance and high cost of operation. To put it in the words of a representative of the Ministry, "no proper maintenance of rigs took place and no proper preplanning of each year's activity seems to have been done in those years. Otherwise the results would have been better." The Committee hope that suitable corrective measures would be taken to put the Organisation an efficient footing.

1	2	3	4
16	5-26	Deptt. of Agriculture	<p>The number of rigs which individually suffered loss of operational days in excess of 120 days in a year during the period 1966-67 to 1969-70 was 14 due to off-season, 9 due to waiting, 2 due to transit and 8 due to repairs out of 27 rigs employed on an average. Although maximum off-season period is only 3 months in a year the loss suffered went up to as much as 235 days in one case. The Committee would like Government to examine in details all such cases of heavy losses of operational days with a view to take effective remedial action.</p>
17	5-27	-do-	<p>The Committee cannot find any justification for the long waiting for site, material and equipment, staff and last but not the least instructions and decision from higher officers. A need for better planning and coordination is clearly indicated.</p>
18	5-28	-do-	<p>Now that the jurisdiction of each field division has been clearly defined, the Committee trust that there would be no more of criss-cross movements of rigs involving avoidable loss of time and shifting charges as in the past.</p>
19	5-29	-do-	<p>Admittedly repairs were taking place and rigs were moved during the working season thereby increasing the total loss of operational days. The Committee would suggest that repairs and movement of rigs should be done as far as possible during off-season.</p>

20 5.30 -do-

A comparison of performance of rigs in 1966-67 with that in 1968-69 would show that with almost twice the number of operational days the footage drilled was only marginally more in 1966-67. From the rig-wise details of drilling furnished by the Ministry, the Committee find that there is scope for better performance. The Committee suggest that norms for drilling operations in terms of average footage per rig per day may be evolved in the interest of keeping a contemporaneous watch over performance and taking remedial measures, as necessary.

21 5.31 -do-

An important deficiency in the Organisation is the lack of adequate trained personnel which is understandably responsible for the efficiency being at a low ebb. The Committee note that some of the better men left the Organisation because there was uncertainty about its permanent set up. The Committee would like Government to take a firm decision about the role, status and functioning of the Organisation at an early date as recommended elsewhere in this Report.

73

22 5.32 -do-

It is surprising to learn that this important Organisation was run with retired or inexperienced personnel which the Committee strongly deprecate. What is more surprising is that the Organisation was going without a Chief Engineer from September, 1968. The Committee would urge that the appointment to the post should be made soon. Sustained measures should also be taken to train staff in exploratory and drilling work in the interest of improving performance.

	2	3	4
23	6.12	Deptt. of Agriculture	The Committee note that the cost per footage drilled suddenly increased from Rs. 16.87 in 1965-66 to Rs. 33.08 in 1966-67 and further went up to Rs. 43.75 in 1968-69. The Committee were informed that as a result of various steps taken in 1969-70 including acquisition of new rigs the cost could be reduced to Rs. 17.29. In the opinion of the Committee, there should be some arrangement in the Ministry in future to have a periodical review of various aspects of the working of the Organisation.
24	6.13	-do-	The Committee understand that the ETO holds a virtual monopoly of drilling in difficult areas. As there is not as yet any effective competitor in the field, the Committee feel that there should be a stricter self-imposed control on cost.
25	7.12	-do-	From the material placed before them, the Committee have come to the inescapable conclusion that there has so far been no control in the Organisation on procurement, maintenance and repair of machinery and equipment. The Technical Team has brought out a number of vital deficiencies in this regard. While the Committee hope that Government will attend to those deficiencies expeditiously, they would in particular like the following to be considered in right earnest:— (i) There should be a proper planning and provisioning of spares in the Organisation and the headquarters should,

in particular, endeavour to embark on 'Import substitution' in consultation with Ministry of Industrial Development and the DGTD. Indigenous rigs should be procured as far as possible to meet future requirements; and

- (ii) The Organisation should attempt to 'standardise' the machinery and equipment progressively in future in order to avoid difficulties in procuring spare parts and assemblies for different makes and models.

26 7.13 -do-

The Committee understand that an Executive Engineer has been deputed to undertake a survey of all the existing machines and equipment with a view to taking action for the disposal of all such items as have already outlived their useful life and/or are beyond economical repairs. The Committee hope that this work would be completed expeditiously and replenishments wherever necessary would be made with due regard to import substitution and standardisation.

27 8.11 -do-

The Committee note that the Exploratory Tubewells Organisation had referred the defects noticed to the Ministry for discussion in the departmental committee which had recommended purchase of the rigs. The Committee would like to know the outcome of the discussion.

28 8.12 -do-

During evidence the Committee were informed that "some delay certainly took place in erection of the rigs." The Committee would like to know whether the liability of the firm to pay com-

75

1	2	3	4
			<p>pensation for the loss sustained by Government due to delay in the erection of the rigs was examined.</p>
29	8-13	Deptt. of Agriculture	<p>As regards sending the engineers for training at the Principal's Works in USA, the Committee cannot help feeling that they should have been sent earlier especially in view of the fact that the rigs imported were of new design with which the engineers in the ETO were not familiar.</p>

Sl. No.	Name of Agent	Agency No.	Sl. No	Name of Agent	Agency No.
DELHI					
24.	Jain Book Agency, Connaught Place, New Delhi.	11	33.	Oxford Book & Stationery Company, Scindia House, Connaught Place, New Delhi—1.	68
25.	Sat Narain & Sons, 3141, Mohd. Ali Bazar, Mori Gate, Delhi.	3	34.	People's Publishing House, Rani Jhansi Road, New Delhi.	76
26.	Atma Ram & Sons, Kashmir Gate, Delhi-6.	9	35.	The United Book Agency, 48, Amrit Kaur Market, Pahar Ganj, New Delhi.	88
27.	J. M. Jains & Brothers, Mori Gate, Delhi.	11	36.	Hind Book House, 82, Janpath, New Delhi.	95
28.	The Central News Agency, 23/90, Connaught Place, New Delhi.	15	37.	Bookwell, 4, Sant Narankari Colony, Kingsway Camp, Delhi-9.	96
29.	The English Book Store, 7-L, Connaught, Circus, New Delhi.	20	MANIPUR		
30.	Lakshmi Book Store, 42, Municipal Market, Janpath, New Delhi.	23	38.	Shri N. Chasoba Singh, News Agent, Ram Lal Paul High School Annex, Imphal.	77
31.	Bahree Brothers, 188 Lalpatrai Market, Delhi-6.	27	AGENTS IN FOREIGN COUNTRIES		
32.	Jayana Book Depot, Chapparwala Kuan, Karol Bagh, New Delhi.	66	39.	The Secretary, Establishment Department, The High Commission of India, India House, Aldwych, LONDON W.C.—2.	59

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