CHAPTER 13. HYDRO-ELECTRIC MACHINERY

(1) Group Arrangements in the Home Market

275. We have said in paragraph 153 that the only current arrangements concerned with the supply of hydro-electric machinery in the home market relate to the notification of enquiries and orders for water turbine driven alternators under an agreement (the Large Dynamo and Motor Agreement) which is for the most part concerned with machinery in class (*b*). From 1946 to 1952, the Groups also operated a notification agreement (the North of Scotland Hydro-Electric Agreement) the subject matter of which was "any enquiry for any water turbine for the North of Scotland Hydro-Electric Board, having an output of not less than 200 B.H.P.". It was the intention that the agreement should "operate to the advantage of the Signatories by providing means to enable reasonable prices and conditions of contract to be obtained". Procedure for notification of enquiries and orders was generally similar to that described in paragraphs 165 to 167: there were no provisions for compensation for tendering expenses (although on one enquiry compensation was in fact agreed*) or for contributions to an administration fund. There were four signatories. Two of the four were companies which make or procure the manufacture of both water turbines and the associated alternators; the others make turbines only (see paragraph 149).

276. During the life of the agreement orders for water turbines to a total capacity of 856,957 B.H.P. were received by the signatories from the Board. In no cases were prices agreed between the tenderers. The adoption of common minimum prices, to apply to the set as a whole, was discussed but no conclusion was reached; at no time have there been arrangements of this nature between the water turbine builders and the alternator maker signatories of the Large Dynamo and Motor Agreement, and there are no arrangements for common minimum prices for water turbine driven alternators following notification under that agreement.

277. The North of Scotland Hydro-Electric Agreement was terminated in October, 1952, when it had been found that, as the result of the Board's policy of selecting its suppliers and placing its orders for manufacture in Scotland, the agreement served no useful purpose. The Board itself has told us that its policy has resulted in the establishment in the years following 1947 of "a new hydro-electric industry on Clydeside". The Board says that in 1951 and 1952 all its requirements were supplied by four manufacturers. The English Electric Co. Ltd. (English Electric), The Harland Engineering Co. Ltd. (Harland), Gilbert, Gilkes & Gordon Ltd. and Bruce Peebles & Co. Ltd.† The Board continues: "Hydro-electric plant is made for the English Electric Company by Harland & Wolff . . . at Scotstoun, Glasgow . . . In addition John Brown & Co. make turbines for Boving, as Glenfield & Kennedy have also done, and the Harland Engineering Company manufacture complete hydro-electric plant . . . in Alloa." The Board claims that this new Scottish industry "has already built up a large export market equivalent to more than twice" the Board's own requirements, that "the Board's hydro-electric developments have provided for the first time in this country orders for a variety of hydro-electric plant which has had the effect of stimulating exports", and that "the Board's power stations provide a 'shop window' . . . for foreign purchasers to see". The Board's policy is responsible to some extent for the existence of arrangements whereby

* The sum paid was divided equally among the four signatories.

† Bruce Peebles makes water turbine driven alternators but not the turbines. The company is a member of the Large Dynamo and Motor Agreement.

one company makes hydro-electric machinery for another, and for the choice in such cases of sub-contractors with works in Scotland.

(2) The International Electrical Association Ltd.

Arrangements for Export

278. The two International Electrical Association Ltd. (IEA) notification agreements relating to hydro-electric machinery supplied for export cover respectively water turbines of 5,000 B.H.P. and above (and water turbine installations of 10,000 B.H.P. and above),* and water turbine driven alternators of 2,000 kVA and above. The provisions of these agreements are the same as those of IEA notification agreements relating to steam turbo generating machinery (see paragraphs 165 to 167).

279. There are at present 13 foreign and three British signatories of the Notification Agreement for Water Turbines and 11 foreign and five British signatories of the Notification Agreement for Water Turbine Driven Alternating Current Generators,† and it is in these types of machinery (more particularly water turbines) that foreign manufacturers in recent years have taken the most active interest within the IEA (see paragraph 91).

280. In 1945 four of the five United Kingdom companies which were then signatories of the notification agreements (namely English Electric, The British Thomson-Houston Co. Ltd., Metropolitan-Vickers Electrical Co. Ltd. and Boving & Co. Ltd. (Boving)) entered into the Hydro-Electric Plant Arrangement (HEPA); they were joined by the fifth company (The General Electric Co. Ltd. (GEC)) in 1948. None of the foreign manufacturers concerned (one of whom is an associate of Boving) is a party to the Arrangement. Another United Kingdom manufacturer has joined the turbine notification agreement since 1945, but is not a party to the Arrangement. The Arrangement relates to hydro-electric installations of 1,000 kW capacity and above. It therefore covers a wider field than the two notification agreements and includes equipment outside the scope of our inquiry. As it covers turbines and alternators of a lower minimum capacity than those notifiable under the notification agreements, it supplements the provisions of those agreements by providing that the five parties shall notify enquiries received for turbines of 1,000 kW—4,999 B.H.P. and for alternators of 1,000 kW—1,999 kVA.

281. The resolution of 1945 records that the parties to the Hydro-Electric Plant Arrangement "mutually desire the opportunity of collaborating on the tendering details for all Hydro-Electric Plant of 1,000 kW and upwards in which they are interested, for installation in any part of the world" except the British home market. Under the current text, as amended in 1950, "each enquiry shall be the subject of a Meeting or correspondence to determine the extent of collaboration possible":‡ "in the event of the Parties collaborating in a Price Arrangement on a particular transaction, and [if] prior to the submission of tenders or the official tender date . . . one of the Parties is asked for and is prepared to give or exchange with a

* 5,000 B.H.P. = approximately 3,730 kw. An "installation", although having an aggregate of 10,000 B.H.P. or above, may include individual turbines of a capacity below 5,000 B.H.P.

† Seven United Kingdom companies are concerned (see Appendix 3). One company is a signatory of both agreements.

‡ The provision formerly continued: ". . . it is understood that if competition is expected from tenderers for plant manufactured by a non-Party, collaboration may . . . be found to be impracticable, particularly if the non-Party is a foreign firm". After the amendment of 1950 Boving, which had given notice of resignation from the Arrangement, withdrew the notice.

non-Party tendering details, then . . . the collaborating generator and turbine Parties shall be informed through the Secretary, and any Party shall have the option to request that the Price Arrangement . . . shall be declared null and void and such a request shall be granted ".

282. Enquiries and orders for hydro-electric machinery do not usually cover both turbine and alternator, and the enquiry for one half of a unit may go to a manufacturer who is not a party to the Arrangement. There is no compulsion under the Arrangement for parties to agree common minimum prices on a particular enquiry, and when they do so agreement is between alternator makers for the alternator and between turbine builders for the turbine. Price arrangements for turbo alternator sets as such are not made and the position may arise where there is a price arrangement for one of the component machines in an installation and not for the other. In practice prices are less likely to be agreed on turbines than on alternators, largely because Boving does not supply alternators and is willing to collaborate with alternator makers who are not parties to the Arrangement. Where prices are not agreed, however, the conditions of contract applicable to an enquiry often are.

283. There are no price schedules for hydro-electric machinery, and where prices are agreed they are arrived at by compromise based on the individual parties' suggested selling prices for the enquiry concerned. Each party's proposed price will be related to his estimate of cost, but no breakdown of the total figure is given and the amount of the profit element included in the proposal is not disclosed. There is no general understanding among the parties regarding the level of profit. On receipt of these proposals, and where there are two or more parties, the Secretary calculates and makes known the average of the proposed prices, which he then puts forward as a basis for agreement. The average or a higher or lower figure may be adopted as the result of subsequent discussion among the parties. Considerations taken into account when the average is not adopted are similar to those described in relation to prices for steam turbo generating machinery (see paragraph 200). As in the case of steam driven machinery, the prices agreed for hydro-electric machinery are minimum prices f.o.b.; any additions to the f.o.b. price are based on estimated cost and subsequently adjusted in accordance with expenditure actually incurred.

284. We have examined in detail the IEA's records relating to one enquiry, and we have traced in less detail the history of 21 other enquiries for water turbines and 16 other enquiries for water turbine driven alternators. The enquiries relate to the period 1943 to 1952. They show *inter alia* that in the cases considered the prices proposed for turbines by one of the two companies concerned were generally higher, and at times considerably higher, than those proposed by the other, but for water turbine driven alternators the prices proposed by this second concern were generally markedly higher than those of the other parties making alternators. Agreement on prices both for turbines and alternators was generally reached on the basis of the average of the proposals, though in some cases the agreed price was below the average, and in one case on alternators it was the average of the two lowest proposals.* In all cases tenders were submitted by the parties to the Secretary of the IEA for scrutiny. The cases examined also show that (i) the British parties have experienced strong competition both from foreign signatories of the Notification Agreement for Water Turbines and from non-signatory manufacturers—particularly American and Canadian

* The IEA has told us that after December, 1953 the lowest price proposed usually became the agreed price for the enquiry.

concerns—who often offered lower prices; (ii) there is considerable scope for alternative designs to meet the purchaser's requirements on a particular enquiry and to make the best use of the geographical conditions of the site.

285. The following table shows the percentage of orders placed with British members of the IEA hydro-electric agreements in 1951 and 1952 on which prices were agreed:—

Year	Water Turbines		Alternators	
	Number of orders	Percentage at agreed prices	Number of orders	Percentage at agreed prices
1951 ...	3 (7 machines)	41·5	9	84
1952 ...	2 (4 machines)	100	6	100

We are told by the British members that shortly before the war United Kingdom manufacturers were in keen competition with one another and jobs were taken at "ruinous" prices. Since 1945 the British members have generally made price arrangements, although exceptionally—and more especially lately—where keen foreign competition is expected a British member who feels that he is able to quote a low price on a particular enquiry may wish to compete independently. *Ad hoc* price arrangements of the kind described above can be agreed only for enquiries where there are two or more tenderers. When, as is usually the case for hydro-electric machinery contracts in the United States, only one of the British members of the IEA tenders, there is no arrangement and the prices quoted will be the manufacturer's own.

286. With few exceptions all price arrangements which have been made have been between United Kingdom manufacturers who are parties to the Hydro-Electric Plant Arrangement. Four non-parties have co-operated on isolated enquiries between 1945 and 1954: of the four, two are foreign signatories of the Notification Agreement for Water Turbines and two are British makers of hydro-electric machinery who were not signatories of either notification agreement. One of the two United Kingdom manufacturers concerned has since joined the Notification Agreement for Water Turbines and the other the Notification Agreement for Water Turbine Driven Alternating Current Generators. The two foreign manufacturers both co-operated on the same two enquiries for water turbines and one of the United Kingdom manufacturers agreed to co-operate on one of those enquiries. The same United Kingdom manufacturer co-operated on one enquiry for alternators and the other on two enquiries for alternators.

287. In addition to co-operating on these two occasions on common minimum price arrangements, foreign manufacturers have also sometimes participated with United Kingdom manufacturers in "protection" arrangements (see paragraph 85). Protection is usually granted to enable the protected party to secure a repeat order or an order for what is in effect an extension or addition to plant already supplied by that party for a particular installation; in some cases it may be granted because the protected party will join a price arrangement on no other terms or it may be a *quid pro quo* for agreement to protect another party on another enquiry. It may or may not be associated with a level price arrangement; if it is not, and protection takes the form of price preference, the protected party gives notice of the price which he intends to quote and the other parties agree to quote higher prices.

288. From 1936 to 1951* there were ten cases of protection for water turbines and six for water turbine driven alternators. 11 of the 16 cases related to enquiries from two countries; single cases occurred on enquiries from five other countries. The protected party was not always successful in obtaining the order.

289. The British members of the IEA have told us that when there are level price arrangements a purchaser who has already bought from a particular manufacturer will in any case normally give him preference provided that he has been satisfied with the machinery originally supplied and the service given, especially since the spare parts for the machinery throughout the installation will then be interchangeable. The Association adds that where the price to the purchaser is raised by protection the increase is never very substantial and that foreign manufacturers prefer protection to any other form of price arrangement. The Association points out that where water turbines are concerned the foreign manufacturers have a relatively greater influence, and this may account for the fact that protection arrangements have so far applied almost without exception only to hydro-electric machinery. Furthermore, we are told that hydro-electric generating stations are always designed for the ultimate number of generating sets required and that the necessary civil engineering works are initially provided to suit the selected design of turbine. In steam generating stations on the other hand, "they build just so much as is necessary for each stage of the installation, and consequently it is as easy for one firm as another to put down . . . an additional set".

290. In addition to the various types of arrangements described above, the IEA has knowledge of two cases since the war where two United Kingdom signatories of the Notification Agreement for Water Turbines made private "loser" arrangements outside the Association. Both cases occurred in 1950. Both were concerned with water turbines required in Commonwealth countries. In the first case the technical difficulties were too great to allow a price arrangement within the Hydro-Electric Plant Arrangement in the time available, and the two companies agreed that if one of them was successful in obtaining the order it would pay the other a sum of £10,000 "to discourage price cutting and to compensate for bearing costs of tendering". In the second case one signatory originally asked for protection as the machinery was required for an extension to an existing station which the company had equipped, but the other company had been specially approached by the purchaser's consultants. A common minimum price for the enquiry was agreed, including a sum of £500 to be paid to the loser direct and not through the Association.

291. The IEA has no machinery for handling loser arrangements, although the parties may notify the Association of the existence of such arrangements: we have noted among those records of the Association which we have examined a statement that loser arrangements were "quite usual in the past".

* The particulars were sent to us by the IEA in October, 1954 but none of them refers to a date later than 1951.