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Report of Third Meeting

of the

ICES/ICNAF Joint Working Party on North Atlantic Salmon

7-8 October 1967

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Report of the Third Meeting of the
ICES/ICNAF Joint Working Party on North Atlantic Salmon
Hamburg, 7 and 8 October 1967

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A. INTRODUCTION

1. As recommended by the Assessments Subcommittee of the Research and Statistics Committee of the International Commission for the Northwest Atlantic Fisheries, this third meeting of the Joint Working Party was convened by the ICNAF *ex officio* member of the Party, Mr B.B.Parrish, who later accepted a unanimous invitation from the members of the Working Party to continue as its Chairman. He asked Mr K.A.Pyefinch to act as Rapporteur.

2. Members present were:

| | | |
|--------------------|---------------------|--------------|
| B.B.Parrish | (Scotland) | (Chairman) |
| R.L.Saunders | (Canada) | |
| Sv. Aa. Horsted | (Denmark) | |
| I.R.H.Allan | (England and Wales) | |
| Miss E. Twomey | (Ireland) | |
| L. Rosseland | (Norway) | |
| K.A.Pyefinch | (Scotland) | (Rapporteur) |
| B. Carlin | (Sweden) | |
| G.J.Ridgway | | |
| acting for B. Skud | (USA) | |

Bruce Kimsey (USA), J.A.Posgay (USA) and L.R.Day (ICNAF) were also present throughout the meeting, and A.E.J.Went (Ireland) was present for part of the meeting.

3. After discussion about the composition of the Working Party in the light of the terms of reference, it was agreed that the Working Party could include a representative of any member country which had an interest in the Greenland salmon problem. It was, therefore, agreed that the Working Party would welcome appropriate suggestions for increases in its membership.

4. The Draft Agenda, as prepared by Mr Parrish, was adopted. The 1967 report of the ICNAF Assessments Subcommittee and the research plans for 1968 formed the basis of the Working Party's discussions. The Working Party also noted with approval that the report of its 1st and 2nd meetings had now been published as an ICES Cooperative Research Report (Series A, No.8).

B. STATISTICS AND RECORDS

(a) Salmon Catch in West Greenland

(i) 1966 and earlier

5. Details of the West Greenland salmon catch are set out in Table 1A, which shows the rapid growth of the inshore fishery from 1961 to 1964, the decrease in the total catch in 1965, followed by an increase in 1966. The totals given are as accurate as can be ascertained, but it was noted that they do not include fish consumed locally or purchased locally for export; this might have amounted to 50-100 tons in 1966.

(ii) 1967

6. Estimates of the catch to the end of September are:

| | |
|----------------------------------|-----------------------|
| Greenland Trade Department | 363 tons (whole fish) |
| Private companies | 110 tons (" ") |
| Danish drift-netters (4 boats) | 20 tons (" ") |
| Faroese boats (at least 2 boats) | ? |
| Norwegian boats (2 or 3 boats) | ? |

7. Thus the catch, as far as can be estimated, totalling approximately 500 tons, is some 15% higher than the catch at the corresponding date in 1966 which would suggest that, if this increase is maintained through the season, the 1967 catch will be nearly 1500 tons, or much the same as in 1964. Further, as more boats are fishing offshore in 1967, it seems likely that the offshore catch will be higher than in previous years. The increased catch this year had chiefly been made in the south (Julianehaab district), but it was reported that the coastal fishery had extended further northwards than in previous years. It was also reported that the condition of the fish caught may be rather better than in previous years, so that although the weight of salmon caught may increase, the number caught may be less.

8. It was noted that at present there are no accurate data on the total fishing effort for the West Greenland fishery, for use in estimating the abundance of the exploited salmon stock. It was agreed, however, that the Danish workers would examine the possibility of obtaining such indices from the data on catch and fishing effort of the gillnets used for research purposes. It was also agreed that the number of nets sold annually would provide some indication of the major changes in fishing activity.

(b) Home Water Salmon Catches

(i) 1966 and earlier

9. Details of the home water salmon catches for a number of countries are given in Table 1B. The outstanding defect in these records is the general lack of separate returns for salmon and grilse and it was recommended that all countries should make every effort (a) to remedy this deficiency as soon as possible, and (b) to obtain more detailed records of the size and age composition of the salmon stocks in home waters, even if they could only be provided for limited areas. It was agreed, however, that although the present catch statistics had obvious limitations, the records available do not indicate any marked downward trend in total salmon catch up to 1966, following the growth of the West Greenland fishery.

10. The Working Party also examined the available information on catch per unit effort for the home water salmon fisheries for some countries (Table 2). It was agreed that, although the estimates had their limitations they, like the catch statistics, show no signs of any marked downward trend in the years following the growth of the West Greenland fishery. It was also agreed that a further and more detailed study of past catch per unit effort data should be made for as many countries as possible.

11. The limitation of the home water catches, in many countries, is the absence of information on rod catches. It was recognized that it was difficult to obtain complete records of this part of the salmon catch but it was agreed that every opportunity should be taken to obtain fuller information. In many cases, however, the rod catch forms only a small part of the total salmon catch, so that its absence does not seriously affect the totals given in Table 1B.

(ii) 1967

12. Members of the Working Party reported on the catches in home waters during 1967 as follows. Scotland reported lower salmon catches during the spring, roughly normal summer salmon catches and a heavy run of grilse. Although the catches were low during the spring, there was evidence which suggested that the stocks of spring salmon were not correspondingly low. England and Wales stated that the characteristics of their catches had been generally similar to those in Scotland, though the runs in the River Axe, where stock records were available, had been good. In Ireland there had been a significant decrease in salmon catches during the spring, and it was thought that this reflected a significant decrease in stock, but there had been good catches of grilse. The situation in Ireland (and to some extent in England and Wales and in Scotland) was, however, complicated by the presence of disease. Iceland reported good catches of salmon and grilse. Sweden had no information on catches but good returns had been received from tagging experiments. No data were available to the Working Party on commercial catches in Canada, but the reports from the Miramichi traps indicated that the numbers of both grilse and larger salmon were among the lowest on record. No data were available on USA catches this year.

(iii) Fishing off Norwegian Coast

13. Norway reported that complete records of catches would not be available for some time, but it seemed likely that the 1967 records would show a decrease. Particular attention was drawn to the development of an offshore fishery which was going on from Bergen northwards to Finmark. This fishery started as a drift net fishery in the early 1960's but in 1966 6 or 7 Danish longline boats had participated. This year perhaps over 20 Danish longliners had taken part, with one or two Swedish boats, and some Faroese and Norwegian boats. Fishing took place from about 12 miles offshore to about 200 miles offshore; it had started in April and continued during May and most of June. The catches taken in this fishery were not available to the Working Party, but reports from commercial fishermen suggest that they might be of the order of 100-200 tons. Salmon, grilse and kelts were

being caught. It seemed likely that this offshore fishery would develop further next year and that more Norwegian boats would participate.

14. The Working Party noted the development of this fishery and agreed that it should be brought to the attention of ICES. It further noted that the development of this fishery may indicate the location of another fishing ground for salmon comparable with that off the West Greenland coast.

(c) Recaptures of Tagged Smolts in the West Greenland Fishery

15. Details of these recaptures are given in Table 3. Much of the information in this table has been reviewed at previous meetings of the Working Party, but there are two striking features about the additional material in this table, i.e. (a) the absence of any recaptures of Norwegian tags in the Greenland fishery, despite the size of the smolt tagging program over the relevant years (this was known previously but full details of Norwegian tag recaptures in home waters are now available), and (b) the sharp increase in the number of Canadian tags in the Greenland fishery in 1966.

16. It was agreed that the increased recapture rate for Canadian tags in the West Greenland fishery indicated an increased proportion of Canadian fish in this fishery during 1966. The reasons for this increase are not clear.

17. It was reported that 4 fish tagged as smolts had been recaptured in West Greenland so far this year, 2 from USA and 1 each from Canada and Sweden.

18. The distribution of recaptures of tagged fish along the Greenland coast was discussed briefly and it was pointed out that an earlier analysis had not revealed any segregation by country of origin at different points along the coast. Denmark undertook to bring this analysis up to date.

C. RESEARCH

(a) Smolt Tagging, 1966 and 1967

19. Details of the smolts tagged in 1966 and 1967 are given in Table 4. It was noted that other countries (perhaps France and Spain) had smolt tagging programs which might be relevant and it was agreed that any information about these programs would be welcomed.

(b) Tagging at West Greenland

20. A report giving details of the onshore tagging program in West Greenland in 1966 was discussed briefly and it was noted, to date, there had been 3 recaptures in home waters from the 728 salmon tagged. Two of these fish had been recaptured in the River Tweed (Scotland), in March and July 1967 respectively and one in the Miramichi estuary (Canada) in June 1967. It was noted that each of these fish had increased in length by about 4 cm between tagging and recapture.

21. It was reported that the 1967 onshore tagging program at West Greenland had just started in the Godthaab district, using Northumberland T-nets in an attempt to increase the proportions of taggable fish in the catch. Weather conditions had been bad and, so far, only four salmon had been caught in the three nets set; two of these had been tagged. Some gill nets had been fished earlier in September and over 100 salmon had been tagged from these nets.

(c) Serology and Parasite Studies

22. It was noted that the investigations in 1966 had included work on the blood characteristics of salmon and on their parasites and that these investigations were being continued in 1967. These investigations are aimed at discovering the origin of the West Greenland salmon stock but it is clear that much more work was needed, both with salmon on the West Greenland coast and in home waters, before the success of these methods can be assessed.

(d) Other Investigations

23. A preliminary report was also available of the results of the cruise of the *A.T. Cameron* (Canada) during which fishing trials were made with longline gear. Between 12 September and 10 October, 37 salmon had been caught, only one of which had been taken by Japanese longline, but it was not known whether any of these had been tagged.

(e) Research Program for 1968

24. It was agreed that the following main lines of investigation should be followed during 1968.

(i) Collection of Statistics in Home Waters

25. The collection of statistics of catches in home waters would be continued and efforts would be made (a) to provide separate records of catches of salmon and grilse, (b) to provide further information on catch per unit effort, (c) if possible, to provide more accurate records of the rod catch for salmon and grilse and (d) to provide records of size and age composition of the catches, even if this were only possible for selected areas.

(ii) Collection of Statistics and Sampling Offshore Fishery

26. The likely increase in the offshore catch in 1967, following the current increase in fishing effort, makes an adequate investigation of this fishery an essential element in the future research program on salmon off West Greenland. This offshore fishery may rapidly become at least as important as the inshore one and its significance can only be assessed when its characteristics are known in detail comparable with those for the inshore fishery. The investigation of this fishery will involve the collection of accurate catch statistics and regular sampling of the catches, particularly for length, weight and age. There are four possibilities for this, (a) obtaining the necessary information from the masters of the commercial boats taking part in the fishery, (b) sampling the fish when landed, (c) placing observers on the boats taking part in this fishery and, (d) the use of research vessels.

27. It was agreed that the Danish member of the Working Party would make enquiries whether it would be possible for the masters of the commercial boats to provide the information needed. In connection with sampling the landed catch, difficulties might arise because the catch was landed in different countries, e.g. in Greenland, Faroes or England, but it was agreed that this possibility should be investigated further. It was also pointed out that records of landings and of catch per unit effort should become available through the existing mechanism for catch statistics within the ICNAF Area.

28. If it were feasible to place observers on commercial vessels the scope and detail of sampling could be increased significantly; this step, however, raised additional problems including (a) whether it would be possible to place observers on board (b) the availability of enough observers to cover the commercial fleet adequately, and (c) whether the observers would be able to make enough observations to justify the expense of this arrangement. It was agreed that further enquiries should be made as soon as possible.

(iii) Research Vessel Operations

29. The use of research vessels for sampling the offshore fishing had most of the advantages of sampling by means of observers with the additional important advantage that scientific operations such as tagging, sampling of blood and other tissues, work on parasites, etc. could be carried out undisturbed by commercial procedure. It was recognized that the use of research vessels would be expensive but it is recommended that a cooperative research vessel program should, if possible, be conducted in the West Greenland area in 1968. It was also agreed that, if research vessels are not available in 1968, the possibilities of chartering commercial vessels to undertake tagging and other research projects in the offshore area should be examined.

(iv) Onshore Program

30. It was agreed that it would be necessary to continue all the current investigations, involving serology and parasite studies and tagging of fish caught on the coast. It seems doubtful whether this year the T-nets will provide a sufficient number of taggable fish but it was agreed that weather conditions may preclude a fair test of these nets this year and that therefore they should be tested further in 1968. Nevertheless, because they might fail again there, consideration should be given immediately to alternative methods so that preliminary tests of these methods might be made during 1968. Denmark drew attention to the increased facilities provided by their new research vessel, which could increase the scope of all the inshore investigations. This offer of further help was warmly welcomed.

(v) Other Investigations

31. During the discussions on investigations in progress, a number of other projects, which might have a bearing on the program for 1968, were mentioned. These included work on liver esterases and on chromosome types (Sweden), the development of serological work involving salmon (Denmark), work on parasites and blood characteristics (USA), the use of pesticide residues as a means of stock separation (Scotland) and the development of a magnetic tag (England). The last project was well advanced and it was hoped that it would be possible to use it on some of the fish tagged in Greenland in 1968.

(vi) Further Assessment of Effects of West Greenland Fishery on Home Waters and Total Salmon Yields

32. The Working Party examined the conclusions in the Report of its 1st and 2nd meetings regarding the effect of the salmon fishery at West Greenland (both in-shore and offshore) on home water and total salmon yields, in the light of the new statistical and biological data collected in 1966. It was agreed that the new data provide no basis for modifying these earlier conclusions, or for making more accurate estimates of the effects. It was also agreed that further analyses should be made of the new data for the 1967 home waters and West Greenland fishery, as soon as these become available and that these should be considered at the proposed meeting of the Working Party, immediately preceding the 1968 ICNAF meeting. In this connection the Working Party wishes to point out that further progress with the assessment of the effects on specific home water fisheries is heavily dependent upon it being possible to obtain accurate estimates of the relative proportions of salmon of different origin in the exploited stock both in the West Greenland coastal area and offshore, and on being able to provide better estimates of the rate of exploitation in the West Greenland area from tagging experiments. An essential requirement for this is an improved method of catching salmon in good condition for tagging, both in the offshore area and in the open sea.

D. OTHER MATTERS

33. Arising from the discussion at the ICNAF Assessment Subcommittee the question of rewards for the recapture of tagged fish was briefly discussed. It was agreed that this was a problem which should be discussed by ICES but that the Working Party should draw their attention to the difference in the current rates of reward, for fish tagged in Greenland, on the two sides of the Atlantic.

34. There was also a brief discussion of the information given on the tags at present in use in Greenland, following Canadian observations that the details appearing at present seemed inadequate. It was agreed that further information was desirable and it was suggested that "Send to nearest Fishery Office, Reward" should be printed on the blank component of the tag.

E. FURTHER MEETING

35. It was recommended that the next meeting of the Working Party should be held immediately before the next meeting of the International Commission for the Northwest Atlantic Fisheries which is to be held in London in May 1968. It was agreed that the meeting should be for two days in the week before the meeting of the Research and Statistics Committee, 21st and 22nd May seem likely to be the most appropriate dates.

F. SUMMARY

36. The present level of the West Greenland salmon catch for 1967 suggests that the total catch for the season may be about the same as that for 1964 (1500 tons). There is evidence of increased effort offshore.

37. An examination of home water catch records for salmon does not reveal any significant downward trend which could be attributed to the development of the West Greenland fishery.

38. Sufficient detailed information is not yet available to indicate the level of home water salmon catches in 1967.

39. Information was given about the development of a salmon fishery off the central and northern coasts of Norway and the significance of this was noted.

40. The outstanding fishery of the recaptures of tagged fish in the West Greenland salmon fishery in 1966 is a sharp increase in the number of Canadian tags recovered. It seems likely that this represents an increase in the proportion of fish of Canadian origin in the fishery in that year.

41. The first results from this year's program are noted.

42. The possibilities for the research program for 1968 are discussed and particular attention is drawn to the need for an investigation, in as much detail as practicable, of the offshore fishing in the West Greenland area.

G. LIST OF RECOMMENDATIONS

43. The Working Party made the following recommendations during the course of the third meeting:

- (a) That efforts should be made to obtain indices of fishing effort from the data on catch and fishing effort for the gill nets used for research purposes.
- (b) That an up-to-date analysis should be prepared of the distribution of recaptures of tagged fish along the Greenland coast.
- (c) That the research program for 1968 should include an investigation of the fishery now developing off the West Greenland coast and that this investigation should, if possible, include a cooperative research vessel program.
- (d) That they should draw the attention of ICES to the salmon fishery now developing off the Norwegian coast and suggest that the Working Party should assess the effect of this and any other sea fishery for salmon which may develop in the North Atlantic, on home water fisheries.
- (e) That they should draw the attention of ICES to the difference in the current rates of reward, for fish tagged in West Greenland, on the two sides of the Atlantic.
- (f) That efforts should be made to provide separate returns of grilse and salmon catches in home waters and that, where possible, information on the size and age composition of home water catches should be provided.
- (g) That, where possible, more detailed information should be provided on catch per unit effort for home water catches and that attempts should be made to assess the rod catch in home waters more accurately.
- (h) That the Working Party should next meet shortly before the next meeting of the Research and Statistics Committee of the International Commission for the Northwest Atlantic Fisheries.

Table 1. Salmon catches at West Greenland and from the home waters of some countries, 1960-66, in metric tons and round fresh weight.

A. West Greenland Area

| | <u>Drift Nets</u> | | <u>Greenland</u> | <u>Total</u> |
|------|-------------------|----------------|------------------------|--------------|
| | <u>Norway</u> | <u>Faroese</u> | <u>Inshore Fishery</u> | |
| 1960 | - | - | ? | ? |
| 1961 | - | - | 127 | 127 |
| 1962 | - | - | 244 | 244 |
| 1963 | - | - | 466 | 466 |
| 1964 | - | - | 1,539 | 1,539 |
| 1965 | + | 36 | 825 | 861 |
| 1966 | + | 87 | 1,251 | 1,338 |

+) Figures not available, but catch known to be less than Faroese

B. Home waters

| | <u>Ireland^a</u> | <u>England & Wales^b</u> | | <u>Sweden^d</u> | <u>Norway^e</u> |
|------|----------------------------|--|--------------------------------|---------------------------|---------------------------|
| | | <u>No.</u> | <u>Approx. wt.^c</u> | | |
| 1960 | 514 | 57,176 | 229 | 30-50 | 1,659 |
| 1961 | 522 | 44,578 | 178 | 30-50 | 1,533 |
| 1962 | 1,180 | 67,231 | 269 | 30-50 | 1,935 |
| 1963 | 1,130 | 62,996 | 252 | 30-90 | 1,786 |
| 1964 | 1,188 | 61,064 | 264 | 30-50 | 2,157 |
| 1965 | 1,112 | ? | ? | 30-50 | 2,000 |
| 1966 | 1,090 | 73,141 | 293 | 30-50 | 1,842 |

| | <u>Salmon</u> | <u>Scotland</u> | <u>Total</u> | <u>Canada^f</u> | <u>USA</u> |
|------|---------------|-----------------|--------------|---------------------------|-------------|
| | | <u>Grilse</u> | | | |
| 1960 | 955 | 473 | 1,428 | 1,635 | less than 2 |
| 1961 | 816 | 374 | 1,190 | 1,581 | less than 2 |
| 1962 | 1,010 | 721 | 1,731 | 1,718 | less than 2 |
| 1963 | 1,280 | 410 | 1,690 | 1,855 | less than 2 |
| 1964 | 1,209 | 695 | 1,904 | 2,126 | less than 2 |
| 1965 | 1,060 | 548 | 1,608 | 2,182 | less than 2 |
| 1966 | 1,060 | 552 | 1,612 | 2,311 | less than 2 |
| | 1,338 | 667 | 2,005 | 2,916 | " " " |

- a. Grilse seem to be about 70-80% by weight or 80-90% by number in total Irish catches. Commercial catches only.
- b. The reported data indicate that with the exception of the northeast coast (where the value is generally higher), the percentage of grilse in net and fixed engine salmon catches is below 13 or 14 and the percentage in rod catches much lower than this.
- c. Values estimated from the reported data on numbers, using a factor of 250 salmon per ton.
- d. Estimated 75% grilse. West coast catch only.
- e. Estimated 15% grilse based on (i) returns from fish merchants and, (ii) tagging data.
- f. Commercial catches only; angling catches (mostly grilse) are about 10% additional. Very few grilse are taken in Nova Scotia and New Brunswick but form a significant part of Newfoundland catches.

Table 2. Estimates of salmon catches per unit effort for some home water fisheries.

| | <u>Canada^a</u> (Drift Nets and Traps) | <u>Ireland</u> (Drift Nets) ^b | (Licences) ^c | <u>Scotland</u> (Fixed Engines) ^d | <i>1 net & 100 lbs</i> |
|------|---|---|-------------------------|---|----------------------------|
| 1960 | 191 | 325 | 950 | 12.8 | |
| 1961 | 165 | 224 | 1,030 | 12.3 | |
| 1962 | 160 | 563 | 2,210 | 14.8 | |
| 1963 | 197 | 456 | 1,940 | 19.9 | |
| 1964 | 255 | 430 | 1,720 | 23.2 | |
| 1965 | 254 | 520 | 1,700 | 17.8 | |
| 1966 | - | 516 | 1,250 | - | |

a. Miramichi area, salmon only. Approximate pooled monthly means for all years per unit of gear.

b. Salmon and grilse per drift net.

c. Pounds per licence.

d. Salmon catch/net/per month

Table 3. Number of smolts tagged and recovered in Greenland and home waters.

| Country | Year of Tagging | No. Tagged | Recoveries | | | Total |
|---------------------|-----------------|---------------|------------|--------------------|---------|-----------|
| | | | Greenland | Grilse | Salmon | |
| Canada | 1963 | 13,182 | 15 | 196 xxx | 3748 | 245 |
| | 1964 | 64,933 | 1416 | 260133 | 100 | 430 453 |
| | 1965 | 62,829 | 119133 | 445333 | 324 | 520 1,012 |
| | 1966 | 45,216 | ca 100 | 32 | | |
| Scotland | 1963 | 17,748 | 10 | 291307 | 150188 | 474 505 |
| | 1964 | 12,180 | 6 | 299 | 217 233 | 516 538 |
| | 1965 | 12,778 13,237 | 69 | 165160 | 125 | 165 294 |
| | 1966 | 25,407 | 23 | 461 | | |
| England & Wales | 1963 | 9,485 | 69 | 816 | 1432 | 49 57 |
| | 1964 | 17,129 | 110 | 1533 | 34 99 | 115 142 |
| | 1965 | 5,974 | 812 | 35 | 259 | 35 106 |
| | 1966 | 12,999 | 5 | 20 | | |
| Norway ^a | 1963 | 10,975 | 0 | 88 | 94 | 182 |
| | 1964 | 10,653 | 0 | 203 | 84 | 287 |
| | 1965 | 11,080 | 0 | 118 | 29 | 147 |
| USA | 1966 | 82,000 | 32 | 424 | | |

a. Data from Rosseland "Norwegian Salmon Tagging Data"; the number of salmon recaptured from 1964 and 1965 is almost certainly incomplete. Over the period 1960-67 79,786 smolts were tagged in Norway and, to date, 2,162 have been recaptured as grilse or salmon. Of these, 15 were recaptured in Sweden, 2 in Denmark and 2,145 in Norway.

Table 4. Number of smolts tagged, 1966 and 1967

| Country | Number tagged | | | | | |
|-----------------|---------------|--------|-----------------|-----------------|----------------|-----------------|
| | 1966 | | | 1967 | | |
| | Hatchery | Wild | Total | Hatchery | Wild | Total |
| Canada | 26,300 | 18,916 | 45,216 | 63,000 | 19,500 | 80,000 (approx) |
| Denmark | 4,270 | 0 | 4,270 | 2,696 | 0 | 2,696 |
| England & Wales | 9668 4,395 | 3,331 | 12,999 7,726 | 16,522 5,199 | 4,218 4,213 | 22,740 9,417 |
| Iceland | 8,300 | 0 | 8,300 | 10,500 | 0 | 10,500 |
| Ireland | 15,000 | 0 | 15,000 | 10,000 | 0 | 10,000 |
| Norway | 16,163 | 2,041 | 18,174 | 4,000 | 20,983? | > 22,000 |
| Scotland | 8,000 | 15,039 | 23,039 | 4,000 | 19,845 | 23,845 |
| Sweden | 11,180 | 0 | 11,180 | 4,000 | 0 | 4,000 |
| USA | 80,000 | 0 | 80,000 | 80,000 | 0 | 80,000 80,700 |

* R.O.s only