

COLUMBIA RIVER TREATY

AGREEMENT

on

SPECIAL OPERATING PLAN FOR DUNCAN RESERVOIR

DURING THE PERIOD 1 AUGUST 1967 THROUGH 31 JULY 1968

A special Duncan operating program for the 1967-68 year was agreed by the Canadian and United States Governments by an exchange of notes dated 8 May 1967 and 18 May 1967, respectively. A more detailed plan for implementation of the agreed upon program is required for operating purposes. The Canadian Entity and the United States Entity agree that the attached "Special Operating Plan for Duncan Reservoir During the Period 1 August 1967 Through 31 July 1968," dated 5 December 1967, carries out this objective.

H. L. Keenleyside

H. L. Keenleyside
Chairman
British Columbia Hydro and
Power Authority
Canadian Entity

H. R. Richmond

H. R. Richmond
Chairman
United States Entity

29. 5. 1968.
(Date signed)

2/29/68.
(Date signed)

5-December 1967

COLUMBIA RIVER TREATY
SPECIAL OPERATING PLAN FOR DUNCAN RESERVOIR
DURING THE PERIOD
1 AUGUST 1967 THROUGH 31 JULY 1968

1. INTRODUCTION

The Special Operating Program for the Duncan Reservoir for the Period 30 April 1967 through 31 March 1968, dated 14 March 1967, was agreed by the Canadian and United States Governments in an Exchange of Notes dated 8 and 18 May 1967. Section 11 of this Program provides that during the period 31 July 1967 through 31 March 1968, beginning when Duncan becomes available for storage regulation, the Duncan Reservoir will be operated by the Canadian Entity as requested by the United States Entity guided by an Operating Rule Curve.

The Canadian and United States Entities now agree that the operation of Duncan Reservoir for power purposes during the period 1 August 1967 through 31 July 1968 will be as described herein and this plan will supersede the "Operating Program for Duncan Reservoir during the Period 31 July 1967 through 31 March 1968" dated 19 July 1967 which was adopted earlier as an interim measure.

2. REFERENCES

The Canadian and United States Entities have agreed on the following related documents:

- (a) "Principles and Procedures for the Preparation and Use of Hydroelectric Plans for Canadian Treaty Storage" dated

July 25, 1967;

- (b) "Program for Filling Duncan Reservoir, April 1, 1968 - June 30, 1968", dated July 26, 1967;
- (c) "Interim Flood Control Operating Plan for Duncan Reservoir 1967-68".

3. OPERATING RULE CURVE

The Operating Rule Curve for Duncan Reservoir during the 1 August 1967 through 31 July 1968 portion of the 1967-68 operating year, to be determined in accordance with the reference documents of Section 2, is defined as follows:

- (a) During 1 August 1967 through 31 December 1967, it is the higher of the Critical Rule Curve and the Assured Refill Curve, except in no case shall it be higher than the Upper Rule Curve.
- (b) During 1 January 1968 through 31 July 1968, it is the lower of the Assured Refill Curve, the Variable Refill Curve and the Upper Rule Curve.

The foregoing curves for Duncan Reservoir, in terms of end-of-month storage content, are as in the attached exhibits:

| | |
|---|-----------|
| <u>Critical Rule Curve</u> | Exhibit 1 |
| <u>Assured Refill Curve</u> | Exhibit 1 |
| <u>Upper Rule Curve</u> | |
| (1) Volume Inflow Forecasting Procedure | Exhibit 2 |
| (2) Flood Control Storage Reservation Diagram | Exhibit 3 |
| <u>Variable Refill Curve</u> | |
| (1) Volume Inflow Forecasting Procedure | Exhibit 2 |
| (2) 95 percent Confidence Forecast and Variable Refill Curve Computation Form | Exhibit 4 |

4. OPERATION

The operation of Duncan Reservoir during the period 1 August 1967 through 31 July 1968 will be in accordance with the reference documents of Section 2, guided by the Operating Rule Curve determined in accordance with Section 3.

5. SCHEDULING STORAGE REGULATION

- (a) The Entities will exchange all current operating data necessary to the regulation of Duncan storage content.
- (b) Unless otherwise mutually agreed, requests by the United States Entity for the regulation of Duncan storage water will be made on a regular weekly basis and will be in accordance with the procedures set out in the letter between Section Chairmen of the International Task Force on Power Operating Plans, dated 7 November 1967, copy of which is attached as Exhibit 5. The Canadian Entity shall be deemed to have fulfilled requests for storage water releases at the Canadian - United States border if storage water requested is released from the Duncan storage content and amounts of water equal or greater than the requested releases are concurrently discharged past Corra Linn Dam.

EXHIBIT 1

SPECIAL OPERATING PLAN FOR THE DUNCAN RESERVOIR

CRITICAL RULE CURVE & ASSURED REFILL CURVE

1967-68

End-of-Month Usable Storage Content in 1000 SFD

| <u>Month</u> | <u>Critical Rule Curve</u> | <u>Assured Refill Curve</u> |
|--------------|--------------------------------|---------------------------------|
| July | 711.4 | - - |
| August | 711.4 | - - |
| September | 621.1 | - - |
| October | 488.9 | - - |
| November | 308.9 | - - |
| December | 151.1 | - - |
| January | 0.0 | 76.6 |
| February | 0.0 | 83.1 |
| March | 0.0 | 92.6 |
| April | 0.0 | 110.3 |
| May | 133.8 | 232.4 |
| June | 390.5 | 517.8 |
| July | 642.0 | 711.4 |

SPECIAL OPERATING PLAN FOR THE DUNCAN RESERVOIR

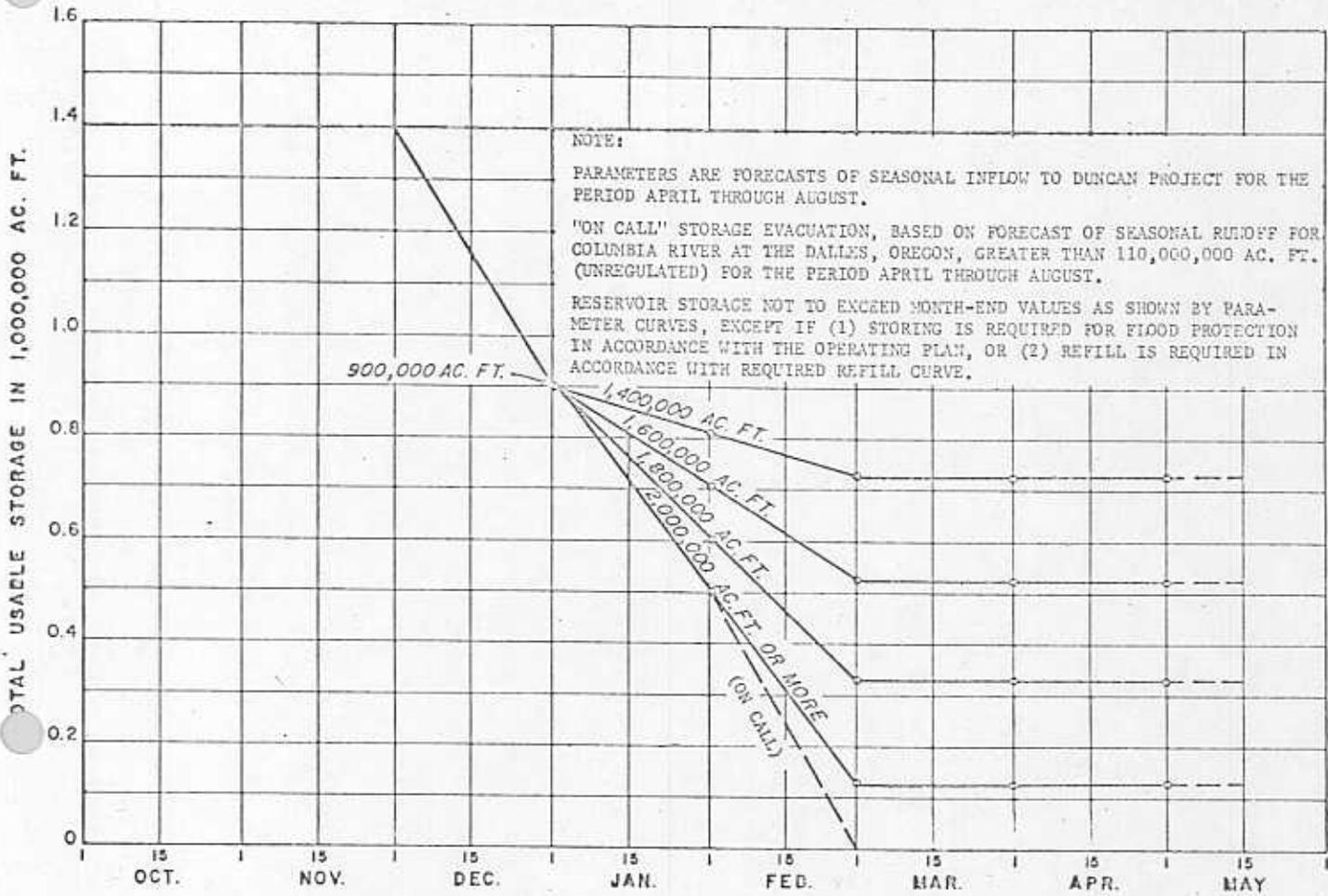
VOLUME INFLOW FORECASTING PROCEDURE
1967-68

| Forecast Date | Weights: | Month | Jan 1: | Feb 1: | Mar 1: | Apr 1: | May 1: | Jun 1: | Jul 1: | Aug 1: | Sep 1: |
|---------------|----------|--------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1 | | Station | | | | | | | | | |
| 2 | | Keslo | | | | | | | | | |
| 3 | 0.6 | Kew Denver | | | | | | | | | |
| 4 | 0.4 | Weighted Sum | | | | | | | | | |
| 5 | | Monthly Weight | 23.78 | 35.67 | 12.07 | 12.07 | 12.07 | 46.76 | 42.08 | 32.73 | 23.38 |
| 6 | | Line 3 x line 4 | | | | | | | | | |
| | | Accumulated line 5 | | | | | | | | | |

SNOW WATER EQUIVALENT

| | | | | | | | | | | | |
|----|----------|--|--------|--------|--------|-------|-------|-------|-------|-------|-------|
| 7 | Estimate | Monthly Weight | 31.26 | 31.26 | 31.26 | 31.26 | 31.26 | 31.26 | 31.26 | 31.26 | 31.26 |
| 8 | | Line 3 x line 7 | | | | | | | | | |
| 9 | | Accumulated line 8 | | | | | | | | | |
| | | Snow Course | | | | | | | | | |
| 10 | | Glacier | 16.03 | | | | | | | | |
| 11 | | Ferguson | 12.09 | | | | | | | | |
| 12 | | Weighted Sum | | | | | | | | | |
| 13 | | CONSTANT - Median Subsequent | 1303.9 | 1148.3 | 1022.7 | 779.8 | 706.6 | 634.3 | 563.4 | 531.0 | 515.9 |
| 14 | | FORECAST - Jan-July Runoff 1000 AF | | | | | | | | | |
| 15 | | % of 19__ - Average | | | | | | | | | |
| 16 | | FORECAST - Apr-Aug Runoff 1000 AF (1.193 x line 14 - 104.7) | | | | | | | | | |
| 17 | | % of 19__ - Average | | | | | | | | | |

All precipitation and snow water equivalent in inches.
Forecast (line 14) is line 6 plus either line 9 or 12 plus line 13.



DUNCAN PROJECT
 FLOOD CONTROL
 STORAGE RESERVATION DIAGRAM
 FLOOD CONTROL OPERATING PLAN
 COLUMBIA RIVER TREATY
 NOVEMBER 1967

SPECIAL OPERATING PLAN FOR THE DUNCAN RESERVOIR
 95 PERCENT CONFIDENCE FORECAST AND VARIABLE REFILL CURVE
 COMPUTATION FORM
 1967-68

| Forecast Date | Jan 1 | Feb 1 | Mar 1 | Apr 1 | May 1 | Jun 1 |
|---|-------|-------|-------|-------|-------|-------|
| 1 Probable Jan 1-Jul 31 inflow, ksfd 1/ | | | | | | |
| 2 95% forecast error, ksfd | 198.0 | 177.0 | 164.0 | 119.0 | 111.0 | 103.0 |
| 3 95% confidence Jan 1-Jul 31 inflow, ksfd 2/ | | | | | | |
| 4 Observed Jan 1-date inflow, ksfd | 0.0 | | | | | |
| 5 Residual 95% date-Jul 31 inflow, ksfd 3/ | | | | | | |
| Assumed Feb 1-Jul 31 inflow, % of volume | 97.94 | | | | | |
| Assumed Feb 1-Jul 31 inflow, ksfd 4/ | | | | | | |
| Min. Feb 1-Jul 31 outflow, ksfd | 18.1 | | | | | |
| Jan 31 Variable Refill Curve, ksfd 5/ | | | | | | |
| Assumed Mar 1-Jul 31 inflow, % of volume | 96.23 | 98.25 | | | | |
| Assumed Mar 1-Jul 31 inflow, ksfd 4/ | | | | | | |
| Min. Mar 1-Jul 31 outflow, ksfd | 15.3 | 15.3 | | | | |
| Feb 28 Variable Refill Curve, ksfd 5/ | | | | | | |
| Assumed Apr 1-Jul 31 inflow, % of volume | 94.30 | 96.28 | 98.00 | | | |
| Assumed Apr 1-Jul 31 inflow, ksfd 4/ | | | | | | |
| Min. Apr 1-Jul 31 outflow, ksfd | 12.2 | 12.2 | 12.2 | | | |
| Mar 31 Variable Refill Curve, ksfd 5/ | | | | | | |
| Assumed May 1-Jul 31 inflow, % of volume | 88.94 | 90.80 | 92.42 | 94.31 | | |
| Assumed May 1-Jul 31 inflow, ksfd 4/ | | | | | | |
| Min. May 1-Jul 31 outflow, ksfd | 9.2 | 9.2 | 9.2 | 9.2 | | |
| Apr 30 Variable Refill Curve, ksfd 5/ | | | | | | |
| Assumed Jun 1-Jul 31 inflow, % of volume | 66.90 | 68.30 | 69.52 | 70.94 | 75.22 | |
| Assumed Jun 1-Jul 31 inflow, ksfd 4/ | | | | | | |
| Min. Jun 1-Jul 31 outflow, ksfd | 6.1 | 6.1 | 6.1 | 6.1 | 6.1 | |
| May 31 Variable Refill Curve, ksfd 5/ | | | | | | |
| Assumed Jul 1-31 inflow, % of volume | 32.03 | 32.71 | 33.29 | 33.97 | 36.02 | 47.89 |
| Assumed Jul 1-31 inflow, ksfd 4/ | | | | | | |
| Min. Jul 1-31 outflow, ksfd | 3.1 | 3.1 | 3.1 | 3.1 | 3.1 | 3.1 |
| Jun 30 Variable Refill Curve, ksfd 5/ | | | | | | |
| Jul 31 Variable Refill Curve, ksfd | 711.4 | 711.4 | 711.4 | 711.4 | 711.4 | 711.4 |

1/ 0.50417 times line 14 of Exhibit 2.
 2/ Line 1 - line 2.
 3/ Line 3 - line 4.
 4/ Preceding line x line 5.
 5/ Full content (711.4 ksfd) plus preceding line less line preceding that.

BRITISH COLUMBIA HYDRO AND POWER AUTHORITY

CANADIAN ENTITY - COLUMBIA RIVER TREATY
INTERNATIONAL TASK FORCE ON POWER OPERATING PLANS
VANCOUVER 1, B.C.

TELEX 04-50381

File: 1951.51

7 November 1967

Mr. H.M. McIntyre, Chairman
United States Section
International Task Force on
Power Operating Plans
P.O. Box 3621
Portland, Oregon 97208
U.S.A.

Duncan Storage Operation
Special Operating Program
April 30, 1967 through March 31, 1968

Dear Mr. McIntyre:

Now that some experience has been gained in the working arrangements set up between us to effect storage releases from Duncan reservoir under the Special Operating Program, it is advisable to establish an agreed procedure which will govern operation of the project through March 31, 1968, except under special circumstances.

Will you please examine the following details and if you agree, sign and return one copy of this letter.

- | | | | |
|----|--|-----|--|
| 1. | Timing of Weekly Request from U.S. Entity | (a) | Preliminary request by telephone not later than noon each Thursday, followed by final request by noon Friday (both to Mr. N.S. Kent, B.C. Hydro) |
| | | (b) | Confirmation request will be dispatched to the Canadian Entity on Friday. |
| 2. | Period covered by Request | | From 00:00 hours on the Sunday following the weekly request to 24:00 hours Saturday one week later. |

| | |
|-------------------------------|-----------------------------------|
| OFFICIAL FILE COPY | |
| No. | Date |
| | 11/2/67 |
| Class. | |
| Referred to: | |
| Action taken: | |
| <input type="checkbox"/> ACK. | <input type="checkbox"/> NO REPLY |
| By: | Date: |

3. Discrepancies

The Canadian Entity will release or store as nearly as possible the amounts specified in the request for that week. Each request is to take into account adjustments if any, which the United States Entity considers necessary for previous inadvertent over or under releases of water from storage. The amount of water released or stored at Duncan during the period of the request will be determined by the changes in reservoir elevation.

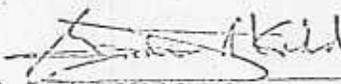
4. Delivery

Duncan storage releases will be made effective at the Canadian-United States border.

5. Modifications

If any modification to a written request is agreed between the Entities, a further written request superseding the original written request will be dispatched immediately by the U.S. Entity to the Canadian Entity.

Yours sincerely,


G.J.A. Kidd, Chairman
Canadian Section
International Task Force on
Power Operating Plans

For the Canadian Entity

The procedure outlined in this letter is acceptable to the United States Entity until further notice.


For United States Entity

date November 13, 1967

c.c. Messrs. B. Goldhammer
G. Fernald, K.D. Earls, N.S. Kent

May 18, 1967

Hon. Paul Martin
Secretary of State for
External Affairs

Sir:

I have the honor to refer to your note of May 8, 1967, and the document attached thereto concerning the special operating program for the project specified in Article II(2)(c) of the 1961 Columbia River Treaty.

I wish to advise that the Government of the United States of America accepts the proposal set forth in your note and agrees that your note and attachment together with this reply shall constitute an agreement between our two Governments relating to the Treaty with effect from April 1, 1967.

Accept, Sir, the renewed assurances of my highest consideration.

/s/ N. W. Butterworth
Ambassador to the U. S.
Ottawa

May 8, 1967

His Excellency
N. W. Butterworth
Ambassador to the United States
Ottawa, Canada

Excellency:

I have the honor to refer to the Treaty between Canada and the United States of America relating to the cooperative development of water resources of the Columbia River Basin signed at Washington, D. C. on January 17, 1961, and in particular to Article 14 (4).

It now appears likely that the discharge works of the project specified in Article II (2)(c) of the Treaty will be closed on or about April 30, 1967, and that a trial filling and test operation period will be necessary before commencement of full operation of the project.

This proposal has been recognized by the United States and Canadian Entities and they have agreed upon specific arrangements for a trial operation should circumstances described in the immediately preceding paragraph occur. These arrangements are described in the attached document entitled Columbia River Treaty, Special Operating Program for the Duncan Reservoir for the period April 30, 1967 through March 31, 1968.

I have the honor to propose that this special operating program be made effective and confirmed by our two Governments and that the two Governments empower and

charge the Entities pursuant to Article 14(4) of the Treaty to carry out its provisions.

I have the honor further to propose that if this proposal meets with the approval of the Government of the United States of America, this note and attachment thereto together with your reply shall constitute an agreement between our two Governments relating to the Treaty with effect from April 1, 1967.

Accept, Excellency, the renewed assurances of my highest consideration.

/s/ Hon. Paul Martin
Secretary of State for
External Affairs

COLUMBIA RIVER TREATY

SPECIAL OPERATING PROGRAM FOR THE DUNCAN RESERVOIR
FOR THE PERIOD 30 APRIL 1967, THROUGH 31 MARCH 1968

1. INTRODUCTION

It is anticipated the discharge works of the Duncan project will be closed on or about 30 April 1967; however, before the reservoir becomes fully operative for power purposes on 1 April 1968, in accordance with Section A (1) (a) of the Attachment Relating to Terms of Sale, a trial filling and test operation period is necessary to ensure that the dam adjusts satisfactorily to the increasing water pressure and that control gates and other hydraulic structures and facilities perform correctly. Implementation of this special Operating Program is subject to closure of the discharge works of the Duncan project with commencement of the trial filling of the reservoir.

2. CANADIAN SHARE

It is the intent of this Special Operating Program to recognize the energy benefit that might result at downstream United States hydro plants from the operation of the Duncan reservoir during the period 30 April 1967 - 31 March 1968. It also sets out the criteria which will govern the operation of the project and the delivery to the Canadian Entity of the Canadian share of the potential downstream United States energy benefit from Duncan storage, which share is agreed to be 34,770 mw-days of energy delivered at Blaine, Washington, (100 average mw less 5% transmission losses, based on the availability of 1.4 million acre-feet usable storage content in Duncan reservoir on 31 July 1967). The power benefits considered herein are limited to energy benefits since dependable capacity is not assured.

3. TRIAL FILLING OF DUNCAN RESERVOIR

The trial filling of Duncan reservoir shall be as directed by the Canadian Entity. However, if releases greater than minimum are required to meet coordinated system load requirements in the United States after making full use of its hydroelectric resources consistent with Energy Content Curves, the Canadian Entity shall fulfill requests of the United States Entity to pass a flow not greater than the inflow to Duncan reservoir.

4. ADVANCE DELIVERY OF CANADIAN SHARE

Beginning on 1 April 1967, and continuing until 31 July 1967, the United States Entity will advance to the Canadian Entity 11,590 megawatt-days of energy, to be delivered in uniform weekly amounts. This advanced delivery of energy may be curtailed should the Canadian Entity request, but in this case the energy which is foregone shall not be delivered later. Details of delivery are further discussed in paragraph 10 below.

5. ADJUSTMENT OF CANADIAN SHARE

On 1 August 1967, the Canadian Share will be adjusted by multiplying the precomputed 34,770 megawatt-days by the ratio that the usable storage in million acre-feet actually filled in Duncan reservoir by 31 July 1967, bears to 1.4 million acre-feet.

$$\text{Canadian Share} = \frac{34,770 (A)}{(1.4)} \text{ mw-days}$$

Where A = usable storage content in million acre-feet in Duncan on 31 July 1967.

6. RATE OF DELIVERY OF CANADIAN SHARE

If by 31 July, 1967, the Canadian Entity informs the United States Entity the Duncan reservoir is available for storage regulation as described in paragraph 11, and:

(a) if Duncan reservoir fills to its full storage content of 1.4 maf by 31 July 1967, the United States will continue the delivery of the remainder of the Canadian Share, in uniform weekly amounts until 31 March 1968.

(b) if the storage content of the Duncan reservoir is less than 1.4 maf on 31 July 1967, the Canadian Share shall be computed as described in paragraph 5, less 11,590 megawatt-days. The remaining megawatt-days so determined shall be divided by 244 days to determine the rate of delivery of the Canadian Share in uniform weekly amounts for the period 1 August 1967, to 31 March 1968.

$$\text{Canadian Share} = \frac{34,770 \frac{(A)}{(1.4)} - 11,590}{244} \text{ average megawatt}$$

7. CURTAILMENT OF DELIVERY OF CANADIAN SHARE AND DISPOSITION OF ENERGY PREVIOUSLY DELIVERED

If the Canadian Entity has not informed the United States Entity by 31 July 1967, that the Duncan reservoir is available for storage regulation, delivery of the Canadian Share shall be discontinued on 31 July 1967. Moreover, if Duncan reservoir is not available for regulation by 31 December 1967, any portion of the advanced delivery of the Canadian Share during the period 1 April 1967, through 31 July 1967, which was not delivered from surplus United States energy will be returned as requested by the United States Entity if needed to meet loads in the United States prior to 31 March 1968, on schedules as agreed by the Entities. Advance delivery that was made from surplus United States energy plus any returnable energy for which return is not requested, will be transferred to the credit of Bonneville Power Administration in an exchange energy account between British Columbia Hydro and Power Authority and Bonneville Power Administration, at the Bonneville

Power Administration Schedule S-1 Wholesale Excess Energy Rate currently in effect.

8. NOTIFICATION OF AVAILABILITY OF DUNCAN RESERVOIR AFTER 31 JULY 1967.

If the Canadian Entity notifies the United States Entity that the Duncan reservoir is available for storage regulation after 31 July 1967, the United States Entity shall immediately resume delivery of the Canadian Share to the Canadian Entity and continue to deliver such energy for the remainder of the period ending 31 March 1968, at a rate computed as described below:

(a) if notification of availability is given prior to 31 December 1967, the Canadian Share will be computed according to the formula in paragraph 6 (b).

(b) if notification of availability is given after 31 December 1967, the Canadian Share will be computed as follows:

$$\text{Canadian Share} = \frac{95 (A^1)}{1.4} D \text{ mw-days}$$

Where D = the number of days from the date of notification through 31 March 1968.

A^1 = usable storage content in million acre-feet in Duncan on date of notification.

In no case will the weekly delivery exceed the average rate of 95 megawatts unless otherwise agreed.

During the period following 31 July 1967, and prior to the date on which notification is given, no deliveries of the Canadian Share shall be made to the Canadian Entity unless otherwise agreed.

9. ADJUSTMENT FOR ADDITIONAL STORAGE IN DUNCAN RESERVOIR DURING AUGUST 1967.

If the Duncan reservoir has been declared available for regulation by 31 July 1967, and the reservoir is not full to 1.4 maf on this date, any further filling of the reservoir during August 1967 will be as requested by

the United States Entity in consultation with the Canadian Entity. Any additional storage thus filled in Duncan reservoir during August 1967 will be included in computations of the Canadian Share and rates of delivery will be increased accordingly following 31 August 1967, as described in paragraphs 5 and 6 except that "A" will be the actual usable storage content in millions of acre-feet in Duncan on 31 August 1967.

10. DELIVERY OF CANADIAN SHARE

In any day the Canadian Share shall be delivered by Bonneville Power Administration at Blaine, Washington, as scheduled by British Columbia Hydro and Power Authority to the extent that facilities and operating limitations permit but in no case will exceed a rate of 180 megawatts. Wheeling charge will be \$.0005 per kwh unless otherwise agreed by the Entities.

11. OPERATION DURING TEST OPERATION PERIOD

During the period 31 July 1967, through 31 March 1968, beginning when Duncan becomes available for storage regulation, the Duncan reservoir will be operated by the Canadian Entity as requested by the United States Entity guided by an Operating Rule Curve mutually agreed in advance. Such Operating Rule Curve will be based on a Critical Rule Curve and on Reservoir Refill Curves which include a volume-of-run-off forecast parameter. Construction of these curves and their use in actual operation of Duncan reservoir will be in general agreement with the procedures of the Pacific Northwest Coordinated Systems.

12. FLOOD CONTROL CONSIDERATIONS

During the special operating program the Entities agree that every effort will be made to preclude adding to the flood hazard downstream from Duncan reservoir. Should it become necessary to evacuate Duncan storage content during the high-water period, the Canadian Entity in consultation with the United States Entity, will attempt to accomplish this evacuation in a manner

least detrimental to flood-control operation.

13. DELAYED DELIVERIES

If deliveries of energy by either party to the other are delayed due to uncontrollable forces, such deliveries shall be made at a time and at a rate agreed by the Entities.

14. APPLICABILITY OF TREATY

This document is subject to the provisions of the Treaty.

DUNCAN LAKE
VOLUME IN 1000 S.F.D.

PAGE 1 OF 4

AVERAGE LAKE
DIFFERENCE ELEVATION
PER TENTH IN FEET

TENTHS OF FEET

LAKE
ELEVATION
IN FEET

| LAKE ELEVATION IN FEET | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | AVERAGE LAKE DIFFERENCE ELEVATION PER TENTH IN FEET | |
|------------------------|--------|-------|-------|-------|-------|-------|--------|--------|--------|--------|---|------|
| 1920 | 1004.1 | 0. | 996.1 | 997.1 | 998.1 | 999.1 | 1000.1 | 1001.1 | 1002.1 | 1003.1 | 0. | 1920 |
| 1919 | 994.1 | 995.1 | 996.1 | 997.1 | 998.1 | 999.1 | 999.1 | 999.1 | 999.1 | 999.1 | 0.99 | 1919 |
| 1918 | 984.2 | 985.2 | 986.2 | 987.2 | 988.2 | 989.2 | 990.2 | 991.2 | 992.2 | 993.1 | 0.99 | 1918 |
| 1917 | 974.3 | 975.3 | 976.3 | 977.3 | 978.3 | 979.3 | 980.3 | 981.2 | 982.2 | 983.2 | 0.99 | 1917 |
| 1916 | 964.4 | 965.4 | 966.4 | 967.4 | 968.4 | 969.3 | 970.3 | 971.3 | 972.3 | 973.3 | 0.99 | 1916 |
| 1915 | 954.5 | 955.5 | 956.5 | 957.5 | 958.5 | 959.5 | 960.5 | 961.5 | 962.4 | 963.4 | 0.99 | 1915 |
| 1914 | 944.7 | 945.7 | 946.7 | 947.7 | 948.7 | 949.6 | 950.6 | 951.6 | 952.6 | 953.6 | 0.98 | 1914 |
| 1913 | 934.9 | 935.9 | 936.9 | 937.9 | 938.9 | 939.8 | 940.8 | 941.8 | 942.8 | 943.8 | 0.98 | 1913 |
| 1912 | 925.2 | 926.2 | 927.1 | 928.1 | 929.1 | 930.1 | 931.0 | 932.0 | 933.0 | 934.0 | 0.98 | 1912 |
| 1911 | 915.4 | 916.4 | 917.4 | 918.4 | 919.3 | 920.3 | 921.3 | 922.3 | 923.2 | 924.2 | 0.97 | 1911 |
| 1910 | 905.7 | 906.7 | 907.7 | 908.6 | 909.6 | 910.6 | 911.6 | 912.5 | 913.5 | 914.5 | 0.97 | 1910 |
| 1909 | 896.1 | 897.0 | 898.0 | 899.0 | 899.9 | 900.9 | 901.9 | 902.8 | 903.8 | 904.8 | 0.97 | 1909 |
| 1908 | 886.4 | 887.4 | 888.3 | 889.3 | 890.3 | 891.2 | 892.2 | 893.2 | 894.1 | 895.1 | 0.97 | 1908 |
| 1907 | 876.8 | 877.7 | 878.7 | 879.7 | 880.6 | 881.6 | 882.5 | 883.5 | 884.5 | 885.4 | 0.96 | 1907 |
| 1906 | 867.2 | 868.1 | 869.1 | 870.0 | 871.0 | 872.0 | 872.9 | 873.9 | 874.8 | 875.8 | 0.96 | 1906 |
| 1905 | 857.6 | 858.6 | 859.5 | 860.5 | 861.4 | 862.4 | 863.3 | 864.3 | 865.3 | 866.2 | 0.96 | 1905 |
| 1904 | 848.0 | 849.0 | 850.0 | 850.9 | 851.9 | 852.8 | 853.8 | 854.7 | 855.7 | 856.6 | 0.95 | 1904 |
| 1903 | 838.5 | 839.5 | 840.4 | 841.4 | 842.3 | 843.3 | 844.2 | 845.2 | 846.1 | 847.1 | 0.95 | 1903 |
| 1902 | 829.0 | 830.0 | 830.9 | 831.9 | 832.8 | 833.8 | 834.7 | 835.7 | 836.6 | 837.6 | 0.95 | 1902 |
| 1901 | 819.5 | 820.5 | 821.4 | 822.4 | 823.3 | 824.3 | 825.2 | 826.2 | 827.1 | 828.1 | 0.95 | 1901 |
| 1900 | 810.1 | 811.0 | 812.0 | 812.9 | 813.9 | 814.8 | 815.8 | 816.7 | 817.7 | 818.6 | 0.94 | 1900 |
| 1899 | 800.7 | 801.6 | 802.6 | 803.5 | 804.4 | 805.4 | 806.3 | 807.3 | 808.2 | 809.2 | 0.94 | 1899 |
| 1898 | 791.3 | 792.2 | 793.1 | 794.1 | 795.0 | 796.0 | 796.9 | 797.8 | 798.8 | 799.7 | 0.94 | 1898 |
| 1897 | 781.9 | 782.8 | 783.8 | 784.7 | 785.6 | 786.6 | 787.5 | 788.5 | 789.4 | 790.3 | 0.94 | 1897 |
| 1896 | 772.5 | 773.5 | 774.4 | 775.3 | 776.3 | 777.2 | 778.1 | 779.1 | 780.0 | 781.0 | 0.94 | 1896 |
| 1895 | 763.2 | 764.1 | 765.1 | 766.0 | 766.9 | 767.9 | 768.8 | 769.7 | 770.7 | 771.6 | 0.93 | 1895 |
| 1894 | 753.9 | 754.8 | 755.7 | 756.7 | 757.6 | 758.5 | 759.5 | 760.4 | 761.3 | 762.3 | 0.93 | 1894 |
| 1893 | 744.6 | 745.5 | 746.5 | 747.4 | 748.3 | 749.2 | 750.2 | 751.1 | 752.0 | 753.0 | 0.93 | 1893 |
| 1892 | 735.3 | 736.3 | 737.2 | 738.1 | 739.0 | 740.0 | 740.9 | 741.8 | 742.7 | 743.7 | 0.92 | 1892 |
| 1891 | 726.1 | 727.0 | 727.9 | 728.8 | 729.8 | 730.7 | 731.6 | 732.5 | 733.5 | 734.4 | 0.92 | 1891 |
| 1890 | 716.8 | 717.8 | 718.7 | 719.6 | 720.5 | 721.5 | 722.4 | 723.3 | 724.2 | 725.2 | 0.92 | 1890 |
| 1889 | 707.6 | 708.6 | 709.5 | 710.4 | 711.3 | 712.2 | 713.2 | 714.1 | 715.0 | 715.9 | 0.92 | 1889 |
| 1888 | 698.4 | 699.4 | 700.3 | 701.2 | 702.1 | 703.0 | 704.0 | 705.0 | 706.0 | 707.0 | 0.92 | 1888 |
| 1887 | 689.3 | 690.2 | 691.1 | 692.0 | 692.9 | 693.9 | 694.8 | 695.7 | 696.6 | 697.5 | 0.92 | 1887 |
| 1886 | 680.1 | 681.0 | 681.9 | 682.9 | 683.8 | 684.7 | 685.6 | 686.5 | 687.4 | 688.4 | 0.92 | 1886 |
| 1885 | 671.0 | 671.9 | 672.8 | 673.7 | 674.6 | 675.5 | 676.5 | 677.4 | 678.3 | 679.2 | 0.91 | 1885 |
| 1884 | 661.9 | 662.8 | 663.7 | 664.6 | 665.5 | 666.4 | 667.3 | 668.2 | 669.1 | 670.1 | 0.91 | 1884 |
| 1883 | 652.7 | 653.7 | 654.6 | 655.5 | 656.4 | 657.3 | 658.2 | 659.1 | 660.0 | 660.9 | 0.91 | 1883 |
| 1882 | 643.7 | 644.6 | 645.5 | 646.4 | 647.3 | 648.2 | 649.1 | 650.0 | 650.9 | 651.8 | 0.91 | 1882 |
| 1881 | 634.6 | 635.5 | 636.4 | 637.3 | 638.2 | 639.1 | 640.0 | 640.9 | 641.8 | 642.8 | 0.91 | 1881 |

MAY 16, 1966

DUNCAN LAKE
VOLUME IN 1000 S.F.F.D.

| LAKE ELEVATION IN FEET | TENTHS OF FEET | | | | | | | | | | AVERAGE DIFFERENCE PER TENTH IN FEET | LAKE ELEVATION IN FEET |
|------------------------------|----------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---|------------------------------|
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | | |
| 1880 | 625.5 | 626.4 | 627.4 | 628.3 | 629.2 | 630.1 | 631.0 | 631.9 | 632.8 | 633.7 | 0.91 | 1880 |
| 1879 | 616.5 | 617.4 | 618.3 | 619.2 | 620.1 | 621.0 | 621.9 | 622.8 | 623.7 | 624.6 | 0.90 | 1879 |
| 1878 | 607.5 | 608.4 | 609.3 | 610.2 | 611.1 | 612.0 | 612.9 | 613.8 | 614.7 | 615.6 | 0.90 | 1878 |
| 1877 | 598.5 | 599.4 | 600.3 | 601.2 | 602.1 | 603.0 | 603.9 | 604.8 | 605.7 | 606.6 | 0.90 | 1877 |
| 1876 | 589.5 | 590.4 | 591.3 | 592.2 | 593.1 | 594.0 | 594.9 | 595.8 | 596.7 | 597.6 | 0.90 | 1876 |
| 1875 | 580.6 | 581.5 | 582.4 | 583.3 | 584.2 | 585.1 | 586.0 | 586.9 | 587.8 | 588.7 | 0.89 | 1875 |
| 1874 | 571.7 | 572.6 | 573.5 | 574.4 | 575.3 | 576.1 | 577.0 | 577.9 | 578.8 | 579.7 | 0.89 | 1874 |
| 1873 | 562.8 | 563.7 | 564.6 | 565.5 | 566.3 | 567.2 | 568.1 | 569.0 | 569.9 | 570.8 | 0.89 | 1873 |
| 1872 | 553.9 | 554.8 | 555.7 | 556.6 | 557.5 | 558.4 | 559.2 | 560.1 | 561.0 | 561.9 | 0.89 | 1872 |
| 1871 | 545.1 | 546.0 | 546.9 | 547.7 | 548.6 | 549.5 | 550.4 | 551.3 | 552.2 | 553.0 | 0.88 | 1871 |
| 1870 | 536.3 | 537.1 | 538.0 | 538.9 | 539.8 | 540.7 | 541.6 | 542.4 | 543.3 | 544.2 | 0.88 | 1870 |
| 1869 | 527.5 | 528.4 | 529.2 | 530.1 | 531.0 | 531.9 | 532.7 | 533.6 | 534.5 | 535.4 | 0.88 | 1869 |
| 1868 | 518.7 | 519.6 | 520.5 | 521.3 | 522.2 | 523.1 | 524.0 | 524.8 | 525.7 | 526.6 | 0.88 | 1868 |
| 1867 | 510.0 | 510.9 | 511.7 | 512.6 | 513.5 | 514.3 | 515.2 | 516.1 | 517.0 | 517.8 | 0.87 | 1867 |
| 1866 | 501.3 | 502.1 | 503.0 | 503.9 | 504.8 | 505.6 | 506.5 | 507.4 | 508.2 | 509.1 | 0.87 | 1866 |
| 1865 | 492.6 | 493.5 | 494.3 | 495.2 | 496.1 | 496.9 | 497.8 | 498.7 | 499.5 | 500.4 | 0.87 | 1865 |
| 1864 | 483.9 | 484.8 | 485.7 | 486.5 | 487.4 | 488.3 | 489.1 | 490.0 | 490.9 | 491.7 | 0.87 | 1864 |
| 1863 | 475.3 | 476.2 | 477.0 | 477.9 | 478.8 | 479.6 | 480.5 | 481.3 | 482.2 | 483.1 | 0.86 | 1863 |
| 1862 | 466.7 | 467.6 | 468.4 | 469.3 | 470.2 | 471.0 | 471.9 | 472.7 | 473.6 | 474.5 | 0.86 | 1862 |
| 1861 | 458.2 | 459.0 | 459.9 | 460.7 | 461.6 | 462.4 | 463.3 | 464.1 | 465.0 | 465.9 | 0.86 | 1861 |
| 1860 | 449.6 | 450.5 | 451.3 | 452.2 | 453.0 | 453.9 | 454.7 | 455.6 | 456.4 | 457.3 | 0.85 | 1860 |
| 1859 | 441.1 | 442.0 | 442.8 | 443.7 | 444.5 | 445.4 | 446.2 | 447.1 | 447.9 | 448.8 | 0.85 | 1859 |
| 1858 | 432.6 | 433.5 | 434.3 | 435.2 | 436.0 | 436.9 | 437.7 | 438.6 | 439.4 | 440.3 | 0.85 | 1858 |
| 1857 | 424.2 | 425.0 | 425.9 | 426.7 | 427.6 | 428.4 | 429.2 | 430.1 | 430.9 | 431.8 | 0.85 | 1857 |
| 1856 | 415.8 | 416.6 | 417.4 | 418.3 | 419.1 | 420.0 | 420.8 | 421.6 | 422.5 | 423.3 | 0.84 | 1856 |
| 1855 | 407.4 | 408.2 | 409.0 | 409.9 | 410.7 | 411.5 | 412.4 | 413.2 | 414.1 | 414.9 | 0.84 | 1855 |
| 1854 | 399.0 | 399.8 | 400.7 | 401.5 | 402.3 | 403.2 | 404.0 | 404.8 | 405.7 | 406.5 | 0.84 | 1854 |
| 1853 | 390.6 | 391.5 | 392.3 | 393.1 | 394.0 | 394.8 | 395.6 | 396.5 | 397.3 | 398.1 | 0.83 | 1853 |
| 1852 | 382.3 | 383.2 | 384.0 | 384.8 | 385.6 | 386.5 | 387.3 | 388.1 | 389.0 | 389.8 | 0.83 | 1852 |
| 1851 | 374.0 | 374.9 | 375.7 | 376.5 | 377.3 | 378.2 | 379.0 | 379.8 | 380.7 | 381.5 | 0.83 | 1851 |
| 1850 | 365.8 | 366.6 | 367.4 | 368.3 | 369.1 | 369.9 | 370.7 | 371.6 | 372.4 | 373.2 | 0.83 | 1850 |
| 1849 | 357.6 | 358.4 | 359.2 | 360.0 | 360.8 | 361.7 | 362.5 | 363.3 | 364.1 | 365.0 | 0.82 | 1849 |
| 1848 | 349.4 | 350.2 | 351.0 | 351.8 | 352.6 | 353.5 | 354.3 | 355.1 | 355.9 | 356.7 | 0.82 | 1848 |
| 1847 | 341.2 | 342.0 | 342.8 | 343.6 | 344.5 | 345.3 | 346.1 | 346.9 | 347.7 | 348.5 | 0.82 | 1847 |
| 1846 | 333.1 | 333.9 | 334.7 | 335.5 | 336.3 | 337.1 | 337.9 | 338.7 | 339.6 | 340.4 | 0.81 | 1846 |
| 1845 | 325.0 | 325.8 | 326.6 | 327.4 | 328.2 | 329.0 | 329.8 | 330.6 | 331.4 | 332.2 | 0.81 | 1845 |
| 1844 | 316.9 | 317.7 | 318.5 | 319.3 | 320.1 | 320.9 | 321.7 | 322.5 | 323.3 | 324.2 | 0.81 | 1844 |
| 1843 | 308.9 | 309.7 | 310.5 | 311.3 | 312.1 | 312.9 | 313.7 | 314.5 | 315.3 | 316.1 | 0.80 | 1843 |
| 1842 | 300.9 | 301.7 | 302.5 | 303.3 | 304.1 | 304.9 | 305.7 | 306.5 | 307.3 | 308.1 | 0.80 | 1842 |
| 1841 | 292.9 | 293.7 | 294.5 | 295.3 | 296.1 | 296.9 | 297.7 | 298.5 | 299.3 | 300.1 | 0.80 | 1841 |

TABLE 1

TABLE 1

| LAKE ELEVATION IN FEET | TENTHS OF FEET | | | | | | | | | | AVERAGE DIFFERENCE PER TENTH IN FEET | LAKE ELEVATION IN FEET |
|------------------------------|----------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---|------------------------------|
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | | |
| 1840 | 285.0 | 285.8 | 286.6 | 287.4 | 288.2 | 288.9 | 289.7 | 290.5 | 291.3 | 292.1 | 0.79 | 1840 |
| 1839 | 277.1 | 277.9 | 278.7 | 279.5 | 280.3 | 281.0 | 281.8 | 282.6 | 283.4 | 284.2 | 0.79 | 1839 |
| 1838 | 269.3 | 270.0 | 270.8 | 271.6 | 272.4 | 273.2 | 274.0 | 274.7 | 275.5 | 276.3 | 0.78 | 1838 |
| 1837 | 261.4 | 262.2 | 263.0 | 263.8 | 264.6 | 265.4 | 266.1 | 266.9 | 267.7 | 268.5 | 0.78 | 1837 |
| 1836 | 253.7 | 254.4 | 255.2 | 256.0 | 256.8 | 257.6 | 258.3 | 259.1 | 259.9 | 260.7 | 0.78 | 1836 |
| 1835 | 245.9 | 246.7 | 247.5 | 248.3 | 249.0 | 249.8 | 250.6 | 251.3 | 252.1 | 252.9 | 0.77 | 1835 |
| 1834 | 238.3 | 239.0 | 239.8 | 240.6 | 241.3 | 242.1 | 242.9 | 243.6 | 244.4 | 245.2 | 0.77 | 1834 |
| 1833 | 230.6 | 231.4 | 232.1 | 232.9 | 233.7 | 234.4 | 235.2 | 236.0 | 236.7 | 237.5 | 0.76 | 1833 |
| 1832 | 223.0 | 223.8 | 224.5 | 225.3 | 226.1 | 226.8 | 227.6 | 228.3 | 229.1 | 229.9 | 0.76 | 1832 |
| 1831 | 215.5 | 216.2 | 217.0 | 217.7 | 218.5 | 219.2 | 220.0 | 220.7 | 221.5 | 222.3 | 0.75 | 1831 |
| 1830 | 208.0 | 208.7 | 209.5 | 210.2 | 211.0 | 211.7 | 212.5 | 213.2 | 214.0 | 214.7 | 0.75 | 1830 |
| 1829 | 200.5 | 201.3 | 202.0 | 202.8 | 203.5 | 204.2 | 205.0 | 205.7 | 206.5 | 207.2 | 0.74 | 1829 |
| 1828 | 193.1 | 193.9 | 194.6 | 195.3 | 196.1 | 196.8 | 197.6 | 198.3 | 199.0 | 199.8 | 0.74 | 1828 |
| 1827 | 185.8 | 186.5 | 187.3 | 188.0 | 188.7 | 189.5 | 190.2 | 190.9 | 191.7 | 192.4 | 0.73 | 1827 |
| 1826 | 178.5 | 179.3 | 180.0 | 180.7 | 181.4 | 182.2 | 182.9 | 183.6 | 184.3 | 185.1 | 0.73 | 1826 |
| 1825 | 171.3 | 172.0 | 172.8 | 173.5 | 174.2 | 174.9 | 175.6 | 176.4 | 177.1 | 177.8 | 0.72 | 1825 |
| 1824 | 164.2 | 164.9 | 165.6 | 166.3 | 167.0 | 167.7 | 168.4 | 169.2 | 169.9 | 170.6 | 0.72 | 1824 |
| 1823 | 157.1 | 157.8 | 158.5 | 159.2 | 159.9 | 160.6 | 161.3 | 162.0 | 162.7 | 163.5 | 0.71 | 1823 |
| 1822 | 150.1 | 150.8 | 151.5 | 152.2 | 152.9 | 153.6 | 154.3 | 155.0 | 155.7 | 156.4 | 0.70 | 1822 |
| 1821 | 143.1 | 143.8 | 144.5 | 145.2 | 145.9 | 146.6 | 147.3 | 148.0 | 148.7 | 149.4 | 0.69 | 1821 |
| 1820 | 136.2 | 136.9 | 137.6 | 138.3 | 139.0 | 139.7 | 140.4 | 141.0 | 141.7 | 142.4 | 0.69 | 1820 |
| 1819 | 129.4 | 130.1 | 130.8 | 131.5 | 132.2 | 132.8 | 133.5 | 134.2 | 134.9 | 135.6 | 0.68 | 1819 |
| 1818 | 122.7 | 123.4 | 124.1 | 124.7 | 125.4 | 126.1 | 126.8 | 127.4 | 128.1 | 128.8 | 0.67 | 1818 |
| 1817 | 116.1 | 116.8 | 117.4 | 118.1 | 118.7 | 119.4 | 120.1 | 120.7 | 121.4 | 122.1 | 0.66 | 1817 |
| 1816 | 109.6 | 110.2 | 110.9 | 111.5 | 112.2 | 112.8 | 113.5 | 114.1 | 114.8 | 115.5 | 0.65 | 1816 |
| 1815 | 103.1 | 103.8 | 104.4 | 105.1 | 105.7 | 106.3 | 107.0 | 107.6 | 108.3 | 108.9 | 0.64 | 1815 |
| 1814 | 96.8 | 97.4 | 98.1 | 98.7 | 99.3 | 100.0 | 100.6 | 101.2 | 101.9 | 102.5 | 0.63 | 1814 |
| 1813 | 90.6 | 91.2 | 91.8 | 92.5 | 93.1 | 93.7 | 94.3 | 94.9 | 95.6 | 96.2 | 0.62 | 1813 |
| 1812 | 84.5 | 85.1 | 85.7 | 86.4 | 87.0 | 87.6 | 88.2 | 88.8 | 89.4 | 90.0 | 0.61 | 1812 |
| 1811 | 78.6 | 79.2 | 79.8 | 80.4 | 81.0 | 81.6 | 82.2 | 82.7 | 83.3 | 83.9 | 0.59 | 1811 |
| 1810 | 72.8 | 73.4 | 74.0 | 74.5 | 75.1 | 75.7 | 76.3 | 76.9 | 77.4 | 78.0 | 0.58 | 1810 |
| 1809 | 67.2 | 67.7 | 68.3 | 68.8 | 69.4 | 70.0 | 70.5 | 71.1 | 71.7 | 72.2 | 0.56 | 1809 |
| 1808 | 61.7 | 62.2 | 62.8 | 63.3 | 63.9 | 64.4 | 65.0 | 65.5 | 66.1 | 66.6 | 0.55 | 1808 |
| 1807 | 56.4 | 56.9 | 57.4 | 58.0 | 58.5 | 59.0 | 59.5 | 60.1 | 60.6 | 61.1 | 0.53 | 1807 |
| 1806 | 51.2 | 51.7 | 52.2 | 52.8 | 53.3 | 53.8 | 54.3 | 54.8 | 55.3 | 55.9 | 0.51 | 1806 |
| 1805 | 46.3 | 46.8 | 47.2 | 47.7 | 48.2 | 48.7 | 49.2 | 49.7 | 50.2 | 50.7 | 0.50 | 1805 |
| 1804 | 41.5 | 41.9 | 42.4 | 42.9 | 43.4 | 43.8 | 44.3 | 44.8 | 45.3 | 45.8 | 0.48 | 1804 |
| 1803 | 36.8 | 37.3 | 37.7 | 38.2 | 38.7 | 39.1 | 39.6 | 40.1 | 40.5 | 41.0 | 0.46 | 1803 |
| 1802 | 32.3 | 32.8 | 33.2 | 33.7 | 34.1 | 34.6 | 35.0 | 35.5 | 35.9 | 36.4 | 0.45 | 1802 |
| 1801 | 28.0 | 28.4 | 28.9 | 29.3 | 29.7 | 30.2 | 30.6 | 31.0 | 31.5 | 31.9 | 0.43 | 1801 |

DUNCAN LAKE
VOLUME IN 1000 S.F.F.D.

PAGE 4 OF 4

| LAKE ELEVATION IN FEET | TENTHS OF FEET | | | | | | | | | | AVERAGE DIFFERENCE PER TENTH IN FEET | LAKE ELEVATION IN FEET |
|------------------------------|----------------|------|------|------|------|------|------|------|------|------|---|------------------------------|
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | | |
| 1800 | 23.9 | 24.3 | 24.7 | 25.1 | 25.5 | 25.9 | 26.4 | 26.8 | 27.2 | 27.6 | 0.41 | 1800 |
| 1799 | 20.0 | 20.4 | 20.8 | 21.2 | 21.6 | 21.9 | 22.3 | 22.7 | 23.1 | 23.5 | 0.39 | 1799 |
| 1798 | 16.4 | 16.7 | 17.1 | 17.4 | 17.8 | 18.2 | 18.5 | 18.9 | 19.3 | 19.6 | 0.36 | 1798 |
| 1797 | 13.0 | 13.3 | 13.6 | 14.0 | 14.3 | 14.6 | 15.0 | 15.3 | 15.7 | 16.0 | 0.34 | 1797 |
| 1796 | 9.9 | 10.2 | 10.5 | 10.8 | 11.1 | 11.4 | 11.7 | 12.0 | 12.4 | 12.7 | 0.31 | 1796 |
| 1795 | 7.2 | 7.4 | 7.7 | 8.0 | 8.2 | 8.5 | 8.8 | 9.1 | 9.3 | 9.6 | 0.27 | 1795 |
| 1794 | 4.8 | 5.0 | 5.3 | 5.5 | 5.7 | 6.0 | 6.2 | 6.4 | 6.7 | 6.9 | 0.24 | 1794 |
| 1793 | 2.9 | 3.1 | 3.2 | 3.4 | 3.6 | 3.8 | 4.0 | 4.2 | 4.4 | 4.6 | 0.19 | 1793 |
| 1792 | 1.4 | 1.5 | 1.7 | 1.8 | 1.9 | 2.1 | 2.2 | 2.4 | 2.5 | 2.7 | 0.15 | 1792 |
| 1791 | 0.4 | 0.5 | 0.6 | 0.7 | 0.7 | 0.8 | 0.9 | 1.1 | 1.2 | 1.3 | 0.10 | 1791 |
| 1790 | 0. | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.3 | 0.4 | 0.04 | 1790 |

TABLE 1

MAY 16, 1966

K.L. Earle 10/22

UNITED STATES ENTITY
COLUMBIA RIVER TREATY

P.O. Box 3621

Portland, Oregon 97208

December 19, 1967

CHAIRMAN:
Administrator,
Bonneville Power Administration
Department of The Interior

MEMBER:
Division Engineer,
North Pacific Division
Corps of Engineers
Department of the Army

Mr. H. R. Richmond, Chairman
U. S. Entity
Bonneville Power Administration
P.O. Box 3621
Portland, Oregon 97208

Dear Mr. Richmond:

Section 11 of the "Special Operating Program for the Duncan Reservoir for the Period 30 April 1967 through 31 March 1968" states that during the period 31 July 1967 through 31 March 1968, the Duncan Reservoir will be operated by the Canadian Entity as requested by the United States Entity, guided by an operating rule curve (Plan of Operation) agreed in advance. However, the Coordinated System Operation Studies on which the plan of operation is based were delayed and have only recently been completed. In the meantime the Entities agreed on the "Operating Program for Duncan Reservoir during the Period 31 July 1967 through 31 March 1968" dated 19 July 1967, which provided in the form of words a plan to be followed as an interim measure.

Now that the Coordinated System Operation Studies have been completed a "Special Operating Plan for Duncan Reservoir during the Period 1 August 1967 through 31 July 1968" has been developed by the International Task Force. A copy of this plan is attached for your information.

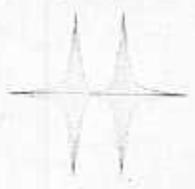
The Task Force feels that it is not necessary for the Entities to make a formal agreement on the plan but instead suggest that recognition of the plan be given by the Entities at their next meeting.

Sincerely yours,

H. M. McIntyre, Chairman
United States Section
International Task Force on
Power Operating Plans

Enclosure

cc:
Division Engineer, Corps of Engineers



BRITISH COLUMBIA HYDRO AND POWER AUTHORITY

CANADIAN ENTITY - COLUMBIA RIVER TREATY
INTERNATIONAL TASK FORCE ON POWER OPERATING PLANS
VANCOUVER 1, B.C.

TELEX 04-50381

File: 1951.51

7 November 1967

Mr. H.M. McIntyre, Chairman
United States Section
International Task Force on
Power Operating Plans
P.O. Box 3621
Portland, Oregon 97208
U.S.A.

Duncan Storage Operation
Special Operating Program
April 30, 1967 through March 31, 1968

Dear Mr. McIntyre:

Now that some experience has been gained in the working arrangements set up between us to effect storage releases from Duncan reservoir under the Special Operating Program, it is advisable to establish an agreed procedure which will govern operation of the project through March 31, 1968, except under special circumstances.

Will you please examine the following details and if you agree, sign and return one copy of this letter.

- | | | |
|----|---|--|
| 1. | Timing of Weekly Request from U.S. Entity | (a) Preliminary request by telephone not later than noon each Thursday, followed by final request by noon Friday (both to Mr. N.S. Kent, B.C. Hydro) |
| | | (b) Confirmation request will be dispatched to the Canadian Entity on Friday. |
| 2. | Period covered by Request | From 00:00 hours on the Sunday following the weekly request to 24:00 hours Saturday one week later. |

| OFFICIAL FILE COPY | |
|---------------------------------|-----------------------------------|
| No. | Date |
| | 11-2-67 |
| Class. | |
| Referred To: | |
| Action Taken: | |
| <input type="checkbox"/> A.C.S. | <input type="checkbox"/> NO REPLY |
| By | Date |



3. Discrepancies

The Canadian Entity will release or store as nearly as possible the amounts specified in the request for that week. Each request is to take into account adjustments if any, which the United States Entity considers necessary for previous inadvertent over or under releases of water from storage. The amount of water released or stored at Duncan during the period of the request will be determined by the changes in reservoir elevation.

4. Delivery

Duncan storage releases will be made effective at the Canadian-United States border.

5. Modifications

If any modification to a written request is agreed between the Entities, a further written request superseding the original written request will be dispatched immediately by the U.S. Entity to the Canadian Entity.

Yours sincerely,



G.J.A. Kidd, Chairman
Canadian Section
International Task Force on
Power Operating Plans

For the Canadian Entity

The procedure outlined in this letter is acceptable to the United States Entity until further notice.



For United States Entity

date November 13 1967

c.c. Messrs. B. Goldhammer
G. Fernald, K.D. Earls, N.S. Kent