

CONSEJO NACIONAL DE OPERACIÓN CNO

ACUERDO No. 136

Mayo 16 de 2001

Por el cual se aprueba los niveles mínimos operativos de los embalses del Sistema Interconectado Nacional para la estación de invierno de 2001 y se deroga un acuerdo

El Consejo Nacional de Operación en uso de sus facultades legales, en especial las conferidas en el Artículo 36 de la Ley 143 de 1994, la Resolución 8-0103 del 2 de febrero de 1995 del Ministerio de Minas y Energía, el Anexo general de la Resolución CREG 025 de 1995, y según lo acordado en la reunión telefónica No 154 del C.N.O. celebrada el 15 de mayo de 2001 y teniendo en cuenta la recomendación del Comité de Operación

ACUERDA:

PRIMERO: Para la estación de invierno del año 2001, comprendida entre mayo 01 de 2001 a noviembre 30 de 2001, los niveles mínimos operativos de los embalses serán los determinados en el Documento ISA UENCND 01-120 del 16 de abril de 2001, el cual forma parte integral del presente Acuerdo. Igualmente se aprueban los parámetros utilizados en el cálculo, tal como aparecen en el documento mencionado.

SEGUNDO: La aplicación de los Niveles Mínimos Operativos de que trata el artículo anterior, se hará a partir del 17 de mayo de 2001.

TERCERO: El presente Acuerdo rige a partir de la fecha de su expedición y deroga el acuerdo 129 del C.N.O.

El Presidente,



ALBERTO OLARTE A.

El Secretario Técnico,



GERMAN CORREDOR A.

ACUERDO 136

CONSEJO NACIONAL DE OPERACIÓN CNO



Operación
de Mercados
de Energía
*Información Eléctrica y
Energética*

Niveles Mínimos Operativos **Horizonte Mayo 01/01 - abril 30/02**

DIRECCIÓN PLANEACIÓN DE LA OPERACION
GERENCIA CENTRO NACIONAL DE DESPACHO

Documento ISA UENCND 01 – 120

CONSEJO NACIONAL DE OPERACIÓN CNO

1. OBJETIVO

Presentar los niveles mínimos operativos para el periodo mayo/01 - abril/02 resultantes de la actualización estacional. Son las resoluciones de la Comisión de la Regulación de Energía y Gas (CREG) relativas a mínimos operativos: números 025 de 1995, 100 de 1997, 056 y 113 de 1998.

2. ANTECEDENTES

- En abril de 2000, ISA publicó, en el documento ISA-CND-00-103, los niveles de los mínimos operativos para el periodo mayo/00 a abril 30/01.
- En noviembre/00 se ratificaron los mínimos calculados en abril/00, para la estación de verano/00-01.
- En marzo/01, ISA publicó, en el documento ISA-CND-00-077, los niveles de los mínimos operativos para el periodo mayo/00 a abril/01, revaluados por la entrada de Porce2.
- En abril de 2001, ISA publicó, en el documento ISA-CND-00-086, los niveles de los mínimos operativos para el periodo mayo/01 a abril 30/02.
- **Resolución 25/95. Artículo 2.1.1.1 del Código de Operación:** "Los Niveles Mínimos Operativos son calculados por el CND estacionalmente o cuando las condiciones del sistema interconectado así lo ameriten".
- El 30 de abril llega al CND comunicación de EPM, radicada en ISA 013004-3, manifestando el cambio de los volúmenes mínimo y máximo técnico del embalse de Porce2. En el proceso de actualización de estos valores, el CND encontró una inconsistencia en la disponibilidad de la planta La Tasajera, utilizada en la repartición entre embalses de la energía a almacenar para mínimos operativos.

3. METODOLOGÍA

La metodología utilizada para estimar las proyecciones de los niveles mínimos operativos en el periodo mayo 01/01 - abril 30/02, corresponde a la descrita por la CREG en la Resolución 025 de 1995, Capítulo Código de Operación.

4. SUPUESTOS

CONSEJO NACIONAL DE OPERACIÓN CNO

4.1 Demanda de energía

De acuerdo con la reglamentación vigente, para el presente estudio se tuvo en cuenta el escenario medio de demanda neta de energía revaluado por la UPME en marzo del 2001.

A partir del escenario medio de demanda neta producido por la UPME, el Centro Nacional de Despacho (CND) ha estimado los consumos auxiliares de las unidades de generación para obtener el escenario medio de demanda bruta del SIN. La Tabla 1 contiene la información de demanda anual de energía neta para el escenario medio y su correspondiente valor en energía bruta.

Tabla 1
DEMANDA ANUAL DEL SIN (GWh-año)

AÑO	DEMANDA NETA		DEMANDA BRUTA	
	GWh/año	% incr.	GWh/año	% incr.
2000	42460		42927	
2001	43715	2.95	44197	2.95
2002	45399	3.85	45937	3.93
2003	47401	4.40	47941	4.36
2004	49446	4.31	49986	4.26
2005	51520	4.19	52060	4.14
2006	54258	5.31	54798	5.25

La tabla 2 presenta la comparación entre la demanda anual de energía bruta del SIN actual y la utilizada en la anterior revisión.

Tabla 2
COMPARACIÓN ESCENARIOS MEDIOS DE DEMANDA (GWh-año)

AÑO	ESCENARIO MEDIO DOC 00 249 (1)	ESCENARIO MEDIO ACTUAL (2)	DIFERENCIA (2) - (1)
2000	43414	42927	-487
2001	45264	44197	-1067
2002	47684	45937	-1747
2003	49777	47941	-1836
2004	51918	49986	-1932

(1) Crecimiento anual equivalente (base: real de 1999 :41871 GWh) 4.39%

(2) Crecimiento anual equivalente: (base: real de 1999 :41871 GWh) 3.60%

Usado también en la revaluación de marzo/01 (Documento ISA UEN CND 01-077)

CONSEJO NACIONAL DE OPERACIÓN

CNO

La tabla 3 contiene los valores mensuales de demanda del SIN para el período mayo 2001 - abril 2002 en el escenario medio, usado también en la revaluación de marzo/01. La demanda para el período mayo 2001 - abril 2002 aumentó en 618 GWh/año con respecto a la demanda del período mayo 2000-abril 2001, considerada en el cálculo de los mínimos operativos del documento 249 de 2000.

Tabla 3
Demanda de Energía mensual (GWh)

	REAL MAYO/00-ABR/01	ESPERADA (1) MAYO/00-ABR/01	ESPERADA MAYO/01-ABR/02	DIFERENCIA ESPERADAS
MAYO	3654.2	3648	3698	50
JUNIO	3512.4	3569	3617	48
JULIO	3604.6	3624	3673	49
AGOSTO	3647.0	3722	3773	51
SEPTIEMBRE	3557.0	3621	3670	49
OCTUBRE	3660.9	3772	3824	52
NOVIEMBRE	3610.3	3637	3686	49
DICIEMBRE	3723.5	3767	3818	51
ENERO	3595 (*)	3654	3708	54
FEBRERO	3491 (*)	3578	3631	53
MARZO	3736 (*)	3829	3886	57
ABRIL	3616 (*)	3706	3761	55
TOTAL	43407.9	44127	44745	618

(1) Documento 00 - 249

(*) Demanda esperada en el escenario medio UPME de marzo/01

4.2 Plan de Expansión

El Plan de Expansión empleado en este estudio corresponde al reportado por UPME el 15 de marzo del 2000, el cual es descrito en la siguiente tabla. Para Porce2 se utilizaron fechas con base en la información más reciente reportada por EPM.

CONSEJO NACIONAL DE OPERACIÓN CNO

Tabla 4

PLAN DE EXPANSIÓN DEL SECTOR ELÉCTRICO - UPME

PROYECTO	MW	FECHA OPERACIÓN COMERCIAL		FECHA ANÁLISIS ENERGÉTICO		Total Año (MW)
Sonsón 2	9.8	abril 1	2001	julio 1	2001	402.8
Porce 2	131	abril 6	2001	agosto 7	2001	
Porce 2	131	mayo 1	2001	agosto 31	2001	
Porce 2	131	mayo 26	2001	septiem 24	2001	
Miel	125	junio 12	2002	septiembre 1	2002	375
Miel	125	julio 8	2002	octubre 1	2002	
Miel	125	agosto 8	2002	diciembre 1	2002	

FECHAS DE ENTRADA DE PORCE2

Base: Información más reciente de pruebas, reportada por EPM

Unidad	Fecha Operación Comercial
Porce21	Marzo, 2001
Porce22	24 abril, 2001
Porce23	18 mayo, 2001

Los cambios fundamentales de este plan con relación al usado en el documento ISA - UENCND 00 - 249 corresponden al adelanto de un semestre en la entrada de Porce2 y al atraso, también de un semestre, en la entrada de Miel.

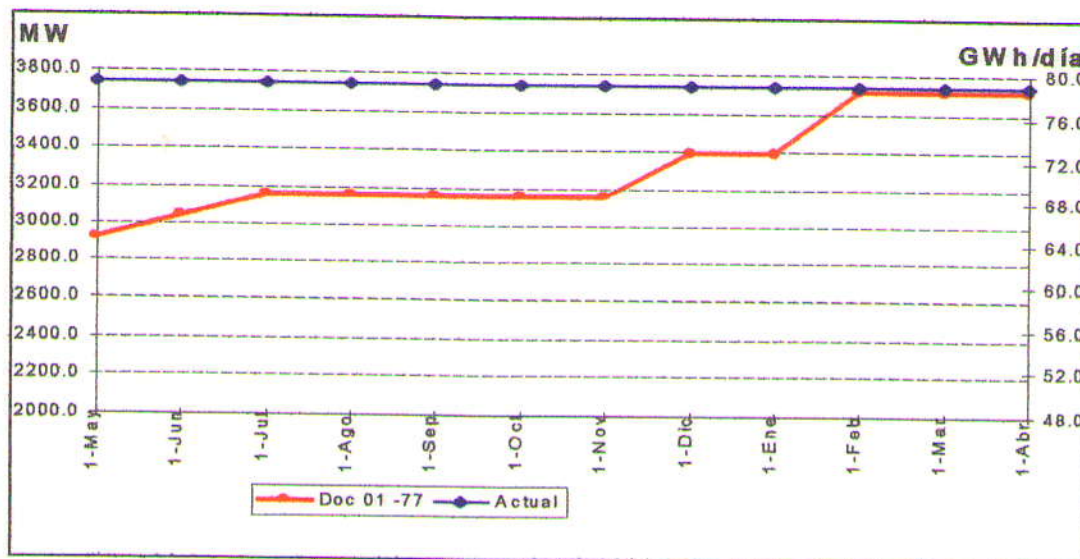
Las nuevas plantas menores se modelaron con sus similares existentes del SIN como plantas determinísticas con un factor de utilización promedio propio de estas plantas en hidrología crítica.

4.3 Disponibilidad Térmica

Se utilizaron los índices de indisponibilidad (IH) calculados con información histórica hasta febrero/01. Para el cálculo se aplicó la metodología vigente según el Anexo CO-1 de la Resolución CREG-025 de 1995, modificado por el Artículo 3o. de la Resolución CREG-113 de 1998 y por la Resolución CREG-073 de 2000

La siguiente gráfica muestra la evolución de la disponibilidad térmica del sistema considerando los supuestos de disponibilidad y el plan de expansión descrito con anterioridad.

CONSEJO NACIONAL DE OPERACIÓN CNO



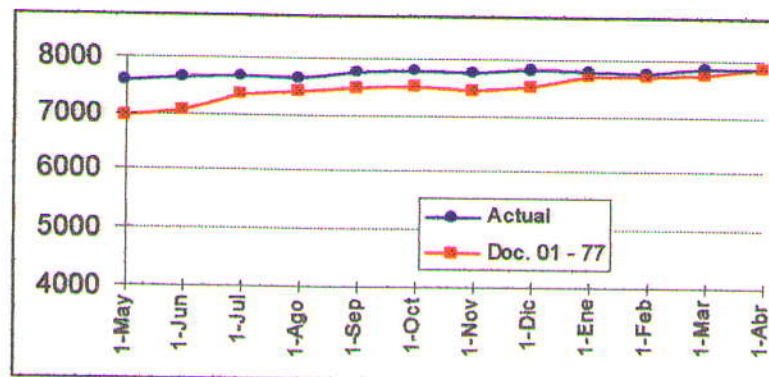
Evolución de la disponibilidad Térmica (MW)

Se puede observar cómo, en la evaluación del documento 01-077, se tenía una disponibilidad térmica promedio de 3306MW para el período mayo/00-abril/01, y en la actual ésta es de 3744 MW, en el período mayo/01-abril/02; es decir 438 MW superior.

4.4 Disponibilidad hidráulica

En el Anexo 1 se presenta la disponibilidad de las unidades de generación hidráulica para el período mayo 2001 - abril 2002. Para el primer año de simulación, se emplearon los índices de indisponibilidad histórica de corto plazo (ICP) calculados por el CND con información hasta febrero/01. Para el resto del horizonte se emplearon los índices de indisponibilidad histórica (IH) resultantes de la aplicación de la resolución CREG 073 de 2000. La siguiente gráfica ilustra la disponibilidad hidráulica del SIN del presente documento (mayo/01-abril/02) y su comparación con el anterior (mayo/00-abril/01).

CONSEJO NACIONAL DE OPERACIÓN CNO



Disponibilidad Hidráulica (MW)

4.5. Datos básicos de embalses

Los parámetros de los embalses del Sistema Interconectado Nacional utilizados en el presente estudio fueron los siguientes:

CONSEJO NACIONAL DE OPERACIÓN CNO

Datos básicos de embalses

Embalse	Máximo Técnico Mm3	Mínimo Técnico Mm3	Factor de conversión promedio		Volumen	
			MW/m3/s	GWh/Mm3	Bruto GWh	Neto GWh
PENOL	1168.94	70.14	13.532	3.759	4394	4130
SANLORENZO	148.85	0.00	8.839	2.455	365	365
PLAYAS	56.13	5.43	6.610	1.836	103	93
PUNCHINA	49.04	0.00	5.023	1.395	68	68
MIRAFLORES	101.04	5.72	8.561	2.378	240	227
TRONERAS	26.18	4.25	8.561	2.378	62	52
RIOGRANDE2	152.14	13.50	9.811	2.725	415	378
PORCE2	175.64	64.26	2.091	0.581	102	65
ESMERALDA	624.82	0.00	6.368	1.769	1105	1105
ALTOANCHICAYA	30.10	0.00	4.160	1.156	35	35
MADRONAL	437.50	0.80	1.780	0.494	216	216
SALVAJINA	731.32	0.00	0.923	0.256	188	188
PRADO	500.00	82.50	0.414	0.115	58	48
BETANIA	1019.74	0.00	0.586	0.163	166	166
GUAVIO	787.32	0.00	9.940	2.761	2174	2174
MUNA	41.40	16.52	15.545	4.318	179	107
TOMINE	690.00	10.00	15.545	4.318	2979	2936
SISGA	96.50	20.00	15.545	4.318	417	330
NEUSA	99.90	50.00	15.545	4.318	431	215
CHUZA	227.00	0.00	15.545	4.318	980	980
URRA	1632.50	420.50	0.445	0.124	202	150

Total	14879.5	14029.4
-------	---------	---------

Total sin Sisga, Neusa, Tominé, Chuza, Salvajina y Urrá	9682.5	9229.8
---	--------	--------

De acuerdo con las Resoluciones 025 y 058 de 1995, y 066 de 1999, los embalses de Sisga, Neusa, Tominé, Chuza, Salvajina y Urrá no se incluyen dentro de los embalses entre los cuales se almacene agua para cubrir contra contingencias hidrológicas al SIN debido a que son *embalses con prioridad de utilización diferente de la energética*. (Art. 2 Res CREG 058 de 1995). Por lo tanto, la reserva máxima del embalse que resulta de agregar el nivel máximo de los embales con mínimos operativos es de 9229.8 GWh o sea un 65.7% del total (9229.8/14029.0).

El embalse de Porce2 presenta un mínimo técnico de 64.26 Mm3 (antes 51.19 Mm3) y un máximo técnico de 175.64 Mm3 (antes 151.42 Mm3).

CONSEJO NACIONAL DE OPERACIÓN

CNO

Se observa que el factor de conversión de Riogrande2, con la entrada de Porce2, aumenta de 7.72 a 9.8112 MW/m3/s. Este es el resultado de agregar 7.72 de La Tasajera y 2.0912 de Porce2, considerando que son plantas en serie.

En general, el valor de factor de conversión de una cadena de plantas en paralelo se estima como el promedio ponderado (por las capacidades) del factor de conversión de las plantas pertenecientes a la cadena. El factor de conversión de la cadena de Bogotá es estimado como:

FACTOR DE CONVERSION – CADENAS EN PARALELO

	FCONV	MW-NETOS
PARAISO	7.89	270
GUACA	9.26	310
CANOAS	1.25	45
SALTO	3.284330709	70 + 57
LAGUNETA	1.8	72
COLEGIO	7.5	300
EQUIVALENTE BOGOTA	15.54526326	
SALTO1	3.48	57
SALTO2	3.125	70
EQUIVALENTE SALTO	3.284330709	

5. Resultados de la Simulación

Mediante el modelo de optimización por aproximaciones sucesivas (AS) se calculó la política de costos en el horizonte mayo del 2001 - abril del 2006. Se procedió a realizar la simulación con horizonte de 12 meses (mayo del 2001 - abril del 2002) tomando escenarios hidrológicos con diferentes PSS (probabilidad de ser superada), y determinando las series hidrológicas para las cuales el sistema no presenta racionamientos.

De acuerdo con la metodología vigente y escrita en la resolución CREG-025 de 1997, la hidrología para las cuales el sistema no presenta racionamientos define la curva de Mínimos Operativos Inferior. Para la hidrología 95PSS se obtuvo esta condición; por lo tanto el mínimo operativo inferior continúa siendo igual al mínimo operativo superior.

Los resultados de la simulación con hidrología 95PSS se presentan a continuación y se comparan con los actualmente vigentes.

CONSEJO NACIONAL DE OPERACIÓN CNO

ACTUAL EVALUACION

2001 - 2002

MOI	95 pss	Descarga	715.5
	95 pss	Déficit	0.0
		M. Técnico	462.7
MOS en nov del 2001			1178.2

DOCUMENTO 00-103

2000-2001

MOI	95 pss	Descarga	1328.83
	95 pss	Déficit	0.0
		M. Técnico	405.3
MOS en nov del 2000			1734.1

Valores en GWh

MOI : Mínimo operativo inferior

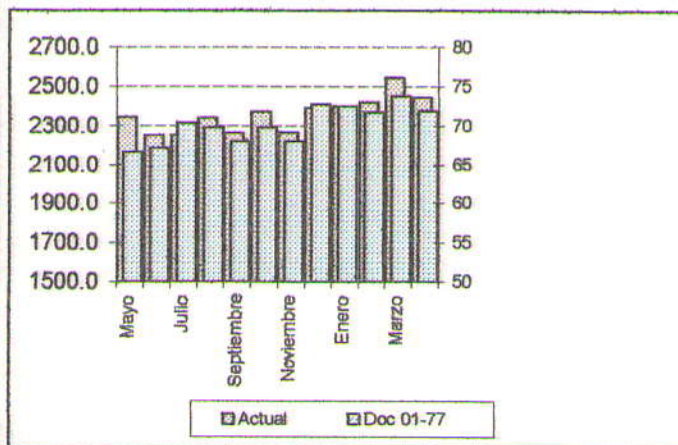
MOS : Mínimo operativo superior

Diferencia -556

Con los valores expuestos anteriormente y con el nivel mínimo técnico del embalse agregado (sin: agregado Bogotá, Chuza, Salvajina y Urrá), encontramos que para el final de noviembre del 2001 (punto máximo del MOS) se obtiene una disminución del nivel mínimo operativo superior de 556 GWh, a pesar de que Porce2 y Riogrande2 contribuyen con el aumento de 45.1 GWh del mínimo técnico del embalse agregado.

Generación Térmica Mensual (GWh)

	Actual	Doc 01-77	Diferencia
Mayo	2348.5	2169.5	179.01
Junio	2253.3	2185.9	67.42
Julio	2254.8	2317.8	-63.05
Agosto	2345.3	2296.2	49.15
Septiembre	2268.2	2222.1	46.13
Octubre	2377.3	2296.2	81.11
Noviembre	2269.6	2222.1	47.54
Diciembre	2396.7	2416.9	-20.21
Enero	2403.7	2405.8	-2.07
Febrero	2423.4	2373.0	50.46
Marzo	2549.5	2456.1	93.36
Abril	2450.0	2376.3	71.69
Total	28340.3	27739.7	600.54



Para el periodo mayo/01 - abril/02 se obtiene un aumento de 600.54 GWh, con respecto al estudio anterior.

En los Anexos 2, 3 y 4 se presentan los niveles mínimos operativos para cada uno de los embalses del SIN que, de acuerdo con la Resolución CREG 058 de 1995, deben

ACUERDO 136

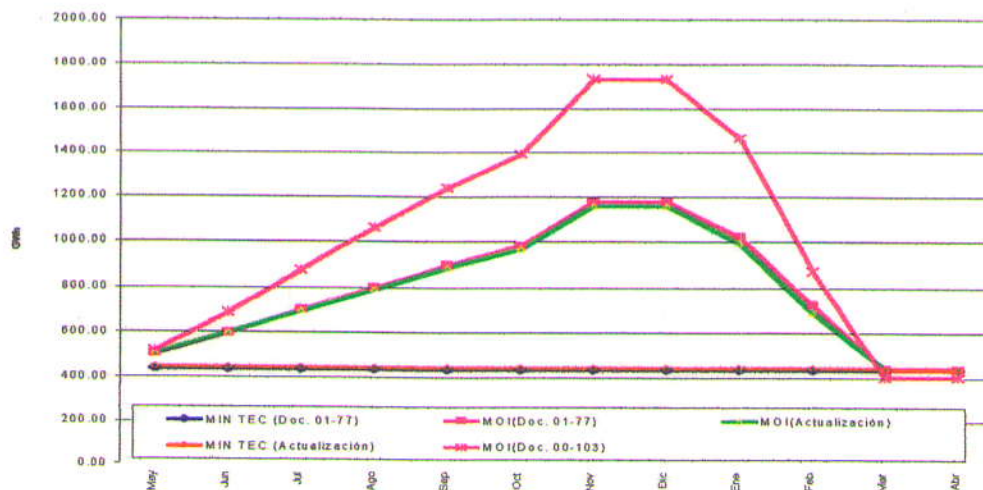
CONSEJO NACIONAL DE OPERACIÓN CNO

poseer curvas de mínimos operativos (se excluyen los siguientes embalses con prioridad de utilización diferente de la energética: Sisga, Tominé, Neusa, Chuza, Salvajina y Urrá).

En la figura siguiente se presenta la evolución mensual de las reservas agregadas para la contingencia escogida (hidrología del 95PSS): mínimo operativo inferior (igual al superior), y mínimo técnico desde mayo/01 hasta abril/02.

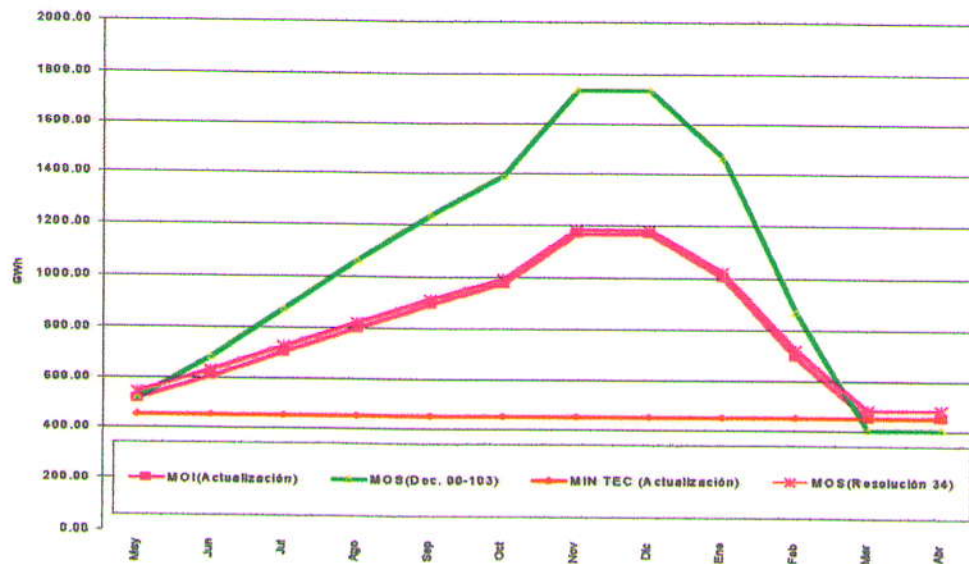
Al aplicar la Resolución CREG 01-034 , artículo 2, parágrafo 2 : *Para todos los efectos, además del comercial, se fija como MOS para los embalses Alto Anchicayá, Betania y Troneras el máximo entre el MOS vigente y el 15% del Volumen Máximo del Embalse*, se obtienen los MOS (Res. 34) que se observan en la gráfica y que hacen que a finales de noviembre/01 el MOS sea de 1183 GWh, frente a un MOI de 1168 GWh y un Mínimo Técnico de 452 GWh.

MINIMOS OPERATIVOS (GWh)
VERSION DOC. 00-103, DOC. 01-077 Y ACTUAL



MINIMOS OPERATIVOS (GWh)
VERSION DOC. 00-103, ACTUAL y RESOLUCION 01-034

CONSEJO NACIONAL DE OPERACIÓN CNO



CONSEJO NACIONAL DE OPERACIÓN CNO

ANEXO 1

Información utilizada

CONSEJO NACIONAL DE OPERACIÓN

CNO

DISPONIBILIDAD TÉRMICA MENSUAL (MW)

	May-01	Jun-01	Jul-01	Ago-01	Sep-01	Oct-01	Nov-01	Dic-01	Ene-02	Feb-02	Mar-02	Abr-02
PAIPA1	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9
PAIPA2	65.7	65.7	65.7	65.7	65.7	65.7	65.7	65.7	65.7	65.7	65.7	65.7
PAIPA3	67.0	67.0	67.0	67.0	67.0	67.0	67.0	67.0	67.0	67.0	67.0	67.0
PAIPA4	149.5	149.5	149.5	149.5	149.5	149.5	149.5	149.5	149.5	149.5	149.5	149.5
PALENQ3	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0
BARRANC1	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8
BARRANC2	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3
BARRANC3	17.8	17.8	17.8	17.8	17.8	17.8	17.8	17.8	17.8	17.8	17.8	17.8
BARRANC4	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
BARRANC5	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.4
TASAJER	143.4	143.4	143.4	143.4	143.4	143.4	143.4	143.4	143.4	143.4	143.4	143.4
TSIERRACC	389.2	389.2	389.2	389.2	389.2	389.2	389.2	389.2	389.2	389.2	389.2	389.2
ZIPAEMG3	44.2	44.2	44.2	44.2	44.2	44.2	44.2	44.2	44.2	44.2	44.2	44.2
ZIPAEMG2	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3
ZIPAEMG4	57.7	57.7	57.7	57.7	57.7	57.7	57.7	57.7	57.7	57.7	57.7	57.7
ZIPAEMG5	48.1	48.1	48.1	48.1	48.1	48.1	48.1	48.1	48.1	48.1	48.1	48.1
BARRANQ3	53.8	53.8	53.8	53.8	53.8	53.8	53.8	53.8	53.8	53.8	53.8	53.8
BARRANQ4	43.6	43.6	43.6	43.6	43.6	43.6	43.6	43.6	43.6	43.6	43.6	43.6
CARTAGE1	53.7	53.7	53.7	53.7	53.7	53.7	53.7	53.7	53.7	53.7	53.7	53.7
CARTAGE2	38.7	38.7	38.7	38.7	38.7	38.7	38.7	38.7	38.7	38.7	38.7	38.7
CARTAGE3	49.5	49.5	49.5	49.5	49.5	49.5	49.5	49.5	49.5	49.5	49.5	49.5
GUAJIRA1	120.7	120.7	120.7	120.7	120.7	120.7	120.7	120.7	120.7	120.7	120.7	120.7
GUAJIRA2	125.6	125.6	125.6	125.6	125.6	125.6	125.6	125.6	125.6	125.6	125.6	125.6
CANDELARIA1	126.9	126.9	126.9	126.9	126.9	126.9	126.9	126.9	126.9	126.9	126.9	126.9
CANDELARIA2	126.3	126.3	126.3	126.3	126.3	126.3	126.3	126.3	126.3	126.3	126.3	126.3
TDORADA	39.9	39.9	39.9	39.9	39.9	39.9	39.9	39.9	39.9	39.9	39.9	39.9
TCENTROCC	242.2	242.2	242.2	242.2	242.2	242.2	242.2	242.2	242.2	242.2	242.2	242.2
FLORES1	134.7	134.7	134.7	134.7	134.7	134.7	134.7	134.7	134.7	134.7	134.7	134.7
FLORES2	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0
FLORES3	146.2	146.2	146.2	146.2	146.2	146.2	146.2	146.2	146.2	146.2	146.2	146.2
PROELEC	68.9	68.9	68.9	68.9	68.9	68.9	68.9	68.9	68.9	68.9	68.9	68.9
TEBSA	744.9	744.9	744.9	744.9	744.9	744.9	744.9	744.9	744.9	744.9	744.9	744.9
TVALLLET	146.3	146.3	146.3	146.3	146.3	146.3	146.3	146.3	146.3	146.3	146.3	146.3
MERRIL	95.7	95.7	95.7	95.7	95.7	95.7	95.7	95.7	95.7	95.7	95.7	95.7
YUMBO3	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
TEMCALJ	198.7	198.7	198.7	198.7	198.7	198.7	198.7	198.7	198.7	198.7	198.7	198.7
Total	3744.7	3744.7	3744.7	3744.7	3744.7	3744.7	3744.7	3744.7	3744.7	3744.7	3744.7	3744.7

CONSEJO NACIONAL DE OPERACIÓN CNO

DISPONIBILIDAD HIDRÁULICA MENSUAL (MW)

	May-01	Jun-01	Jul-01	Ago-01	Sep-01	Oct-01	Nov-01	Dic-01	Ene-02	Feb-02	Mar-02	Abr-02
GUATAPE	541.7	541.7	541.7	541.7	541.7	541.7	541.7	541.7	541.7	541.7	541.7	541.7
JAGUAS	150.3	66.6	166.4	166.4	166.4	166.4	166.4	166.4	166.4	166.4	166.4	166.4
PLAYAS	179.7	179.7	179.7	179.7	179.7	179.7	179.7	179.7	179.7	179.7	179.7	179.7
SANCARLOS	1054.5	1152.1	1059.2	1091.7	1137.7	1124.2	1080.1	1152.1	1124.2	1090.4	1152.1	1152.1
CALDERAS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TRONERAS	39.2	39.2	39.2	39.2	39.2	39.2	39.2	39.2	39.2	39.2	39.2	39.2
GUADALUPE3	253.9	253.9	253.9	253.9	253.9	253.9	253.9	253.9	253.9	253.9	253.9	253.9
GUADALUPE4	188.2	188.2	188.2	188.2	188.2	188.2	188.2	188.2	188.2	188.2	188.2	188.2
RIOGRANDE1	50.5	58.0	58.0	58.0	58.0	58.0	58.0	58.0	58.0	58.0	58.0	58.0
LATASAJERA	297.8	297.8	297.8	297.8	297.8	297.8	297.8	297.8	297.8	297.8	297.8	297.8
PORCE2	273.0	334.1	334.1	334.1	334.1	334.1	334.1	334.1	334.1	334.1	334.1	334.1
CHIVOR	694.7	694.7	694.7	694.7	694.7	694.7	694.7	694.7	694.7	694.7	694.7	694.7
ALTOANCHICAYA	362.7	362.7	362.7	340.6	362.7	362.7	362.7	362.7	362.7	362.7	362.7	362.7
BAJOANCHICAYA	72.3	72.3	51.3	11.7	72.3	72.3	72.3	72.3	72.3	72.3	72.3	72.3
CALIMA1	112.0	103.8	109.1	118.6	118.6	118.6	118.6	118.6	118.6	118.6	118.6	118.6
SALVAJINA	226.8	252.8	277.5	277.5	265.2	277.5	277.5	277.5	277.5	277.5	277.5	277.5
URRA1	273.3	262.0	280.9	305.4	305.4	305.4	305.4	305.4	305.4	305.4	305.4	305.4
ESMERALDA	28.4	26.5	28.4	28.4	28.4	26.6	28.4	28.4	28.4	28.4	28.4	28.4
SANFRANCISCO	98.6	98.6	98.6	98.6	94.3	96.5	98.6	98.6	98.6	98.6	98.6	98.6
INSULA	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6
PRADO	30.7	30.7	30.7	30.7	30.7	30.7	30.7	30.7	30.7	30.7	30.7	30.7
PRADO4	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
BETANIA	540.6	540.6	540.6	511.5	534.5	540.6	540.6	540.6	540.6	540.6	540.6	540.6
FLORIDA2	20.7	20.7	20.7	20.7	20.7	20.7	20.7	20.7	20.7	20.7	20.7	20.7
RIOMAYO	12.4	15.3	15.3	15.3	15.3	15.3	15.3	15.3	15.3	15.3	15.3	15.3
GUAVIO	1091.9	1091.9	1091.9	1091.9	1091.9	1091.9	1091.9	1091.9	1091.9	1091.9	1091.9	1091.9
PARAISO	249.4	249.4	249.4	249.4	249.4	249.4	249.4	249.4	249.4	249.4	249.4	249.4
LAGUACA	294.7	294.7	294.7	294.7	294.7	294.7	294.7	294.7	294.7	294.7	294.7	294.7
CANOAS	37.4	37.4	37.4	37.4	13.7	37.4	37.4	37.4	37.4	37.4	37.4	37.4
SALTO	86.6	97.2	85.6	85.6	86.2	86.5	86.4	85.9	85.9	94.2	99.5	99.5
LAGUNETAS	59.9	51.9	44.9	44.9	59.9	55.1	59.9	59.9	59.9	59.9	59.9	59.9
COLEGIO	221.6	217.9	218.1	216.9	221.5	223.9	223.9	221.6	223.9	223.9	223.9	223.9
Total	7563.5	7652.5	7670.7	7645.3	7776.9	7803.8	7768.3	7837.5	7812.0	7786.4	7853.5	7853.5

CONSEJO NACIONAL DE OPERACIÓN CNO

ANEXO 2: RESULTADOS

NIVELES MINIMOS OPERATIVOS POR EMBALSE

CONSEJO NACIONAL DE OPERACIÓN CNO

GENERACIÓN TÉRMICA MENSUAL (GWh)

	May-01	Jun-01	Jul-01	Ago-01	Sep-01	Oct-01	Nov-01	Dic-01	Ene-02	Feb-02	Mar-02	Abr-02	Total
PAIPA1	18.56	17.96	18.56	18.56	17.96	18.56	17.96	18.56	18.56	16.76	18.56	17.96	218.49
PAIPA2	48.86	47.29	48.86	48.86	47.29	48.86	47.29	48.86	48.86	44.13	48.86	47.29	575.31
PAIPA3	49.83	48.22	49.83	49.83	48.22	49.83	48.22	49.83	49.83	45	49.83	48.22	586.66
PAIPA4	111.22	107.63	111.22	111.22	107.63	111.22	107.63	111.22	111.22	100.45	111.22	107.63	1204.63
PALENQ3	9.65	9.34	9.65	9.65	9.34	9.65	9.34	9.65	9.65	8.72	9.65	9.34	113.63
BARRANC1	6.55	6.34	6.55	6.55	6.34	6.55	6.34	6.55	6.55	5.92	6.55	6.34	77.11
BARRANC2	7.64	7.39	7.64	7.64	7.39	7.64	7.39	7.64	7.64	6.9	7.64	7.39	89.97
BARRANC3	13.21	12.79	13.21	13.21	12.79	13.21	12.79	13.21	13.21	11.94	13.21	12.79	155.58
BARRANC4	4.86	4.7	4.86	4.86	4.7	4.86	4.7	4.86	4.86	4.39	4.86	4.7	57.21
BARRANC5	8.47	8.2	8.47	8.47	8.2	8.47	8.2	8.47	8.47	7.65	8.47	8.2	99.71
TASAJER1	106.72	103.28	106.72	37.2	34.56	106.72	103.28	106.72	106.72	96.39	106.72	103.28	1118.3
TSIERRA3	154.75	198.56	129.46	289.56	280.21	289.56	280.21	289.56	289.56	261.53	289.56	280.21	3030.72
ZIPAEMG3	32.88	31.81	32.88	32.88	31.81	32.88	31.81	32.88	32.88	29.69	32.88	31.81	387.08
ZIPAEMG2	20.31	19.65	20.31	20.31	19.65	20.31	19.65	20.31	20.31	18.34	20.31	19.65	239.08
ZIPAEMG4	42.96	41.58	42.96	42.96	41.58	42.96	41.58	42.96	42.96	38.8	42.96	41.58	505.83
ZIPAEMG5	35.8	34.64	35.8	35.8	34.64	35.8	34.64	35.8	35.8	32.33	35.8	34.64	421.48
BARRANQ3	40.01	38.72	40.01	40.01	38.72	40.01	38.72	40.01	40.01	36.14	40.01	38.72	471.08
BARRANQ4	32.4	31.35	32.4	32.4	31.35	32.4	31.35	32.4	32.4	29.26	32.4	31.35	381.46
CARTAGE1	39.96	38.67	39.96	39.96	38.67	39.96	38.67	39.96	39.96	36.09	39.96	38.67	470.51
CARTAGE2	28.78	27.85	28.78	28.78	27.85	28.78	27.85	28.78	28.78	26	28.78	27.85	338.89
CARTAGE3	36.83	35.65	36.83	36.83	35.65	36.83	35.65	36.83	36.83	33.27	36.83	35.65	433.69
GUAJIRA1	89.79	86.9	89.79	89.79	86.9	89.79	86.9	89.79	89.79	81.1	89.79	86.9	1057.23
GUAJIRA2	93.41	90.4	93.41	93.41	90.4	93.41	90.4	93.41	93.41	84.37	93.41	90.4	1099.84
CANDELARIA1	94.4	91.36	94.4	94.4	91.36	94.4	91.36	94.4	94.4	85.27	94.4	91.36	1111.51
CANDELARIA2	93.93	90.9	93.93	93.93	90.9	93.93	90.9	93.93	93.93	84.84	93.93	90.9	1105.99
TDORADA1	29.65	28.7	29.65	29.65	28.7	29.65	28.7	29.65	29.65	26.78	29.65	28.7	349.16
TCENTRO3	180.17	174.36	180.17	180.17	174.36	180.17	174.36	180.17	180.17	162.74	180.17	164.88	2034.39
FLORES1	100.21	96.97	100.21	100.21	96.97	100.21	96.97	100.21	100.21	90.51	100.21	96.97	1179.86
FLORES2	59.5	57.58	59.5	59.5	57.58	59.5	57.58	59.5	59.5	53.74	59.5	57.58	700.54
FLORES3	108.75	105.24	108.75	108.75	105.24	108.75	105.24	108.75	108.75	96.22	108.75	105.24	1280.39
PROLEC	51.26	49.61	51.26	51.26	49.61	51.26	49.61	51.26	51.26	46.3	51.26	49.61	603.56
TEBSA	251.46	177.12	183.02	183.02	177.12	183.02	177.12	242.34	171.9	407.61	317.62	299.63	2770.98
TVALLET	108.81	105.3	108.81	108.81	105.3	108.81	105.3	108.81	108.81	88.28	108.81	105.3	1281.13
MERRIL1	71.17	68.87	71.17	71.17	68.87	71.17	68.87	71.17	71.17	64.28	71.17	68.87	837.96
YUMBO3	17.86	17.28	17.86	17.86	17.28	17.86	17.28	17.86	17.86	16.13	17.86	17.28	210.24
TEMALH	147.86	143.09	147.86	147.86	143.09	147.86	143.09	147.86	147.86	133.55	147.86	143.09	1740.87
Total	2348.5	2253.3	2254.8	2345.3	2268.2	2377.3	2269.6	2396.7	2403.7	2423.4	2549.5	2450.0	26340.1

CONSEJO NACIONAL DE OPERACIÓN CNO

GENERACIÓN HIDRÁULICA MENSUAL (GWh)

	May-01	Jun-01	Jul-01	Ago-01	Sep-01	Oct-01	Nov-01	Dic-01	Ene-02	Feb-02	Mar-02	Abr-02	Total
GUATAPE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
JAGUAS	41.0	38.2	32.4	39.0	46.8	49.0	45.9	29.7	22.5	17.5	20.9	28.0	410.8
PLAYAS	56.1	49.4	40.2	47.5	58.8	70.4	68.0	42.9	29.4	22.1	27.2	39.2	549.2
SANCARLOS	254.8	215.8	168.5	198.9	250.2	326.1	299.1	193.5	127.7	99.7	120.0	183.4	2437.6
CALDERAS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TRONERAS	14.1	14.3	13.5	14.6	15.4	16.1	13.3	11.3	8.7	6.8	7.7	9.8	145.6
GUADALUPE3	96.4	97.6	92.1	99.8	105.0	109.2	90.5	77.6	60.1	47.6	53.8	67.3	997.0
GUADALUPE4	71.8	72.4	68.3	74.0	78.0	81.0	67.1	57.5	44.4	35.5	39.8	49.8	739.7
RIOGRADE1	4.9	4.6	4.6	4.5	4.3	0.0	11.5	4.4	4.3	8.8	4.2	4.4	60.2
LATASAJERA	0.0	0.0	23.6	95.2	103.7	0.0	131.8	102.1	94.4	161.7	122.5	0.0	835.0
PORCE2	124.6	119.0	112.6	134.1	142.5	0.0	97.8	143.6	110.6	116.2	109.9	93.9	1304.6
CHIVOR	134.0	110.6	90.7	0.0	0.0	1.2	1.8	65.2	30.3	24.4	29.4	284.5	772.1
ALTOANCHICAYA	95.8	74.0	39.7	29.1	50.0	93.7	113.4	82.9	55.2	42.7	53.6	67.8	797.8
BAJOANCHICAYA	23.1	18.8	9.6	6.1	12.0	22.7	29.2	20.5	13.0	10.4	12.2	15.6	193.0
CALIMA1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SALVAJINA	0.0	0.0	38.0	66.6	42.7	0.0	7.2	39.8	90.8	60.6	54.2	30.4	430.3
URRA1	110.4	127.0	135.6	129.9	130.2	139.2	123.5	95.5	70.5	59.8	63.9	71.3	1256.8
ESMERALDA	13.7	12.0	9.7	8.1	8.5	13.4	14.1	12.1	9.6	7.7	9.3	12.4	130.4
SANFRANCISCO	16.9	14.9	11.7	9.9	10.5	16.0	17.0	15.0	11.4	9.0	10.9	14.7	157.7
INSULA	8.1	7.2	6.4	5.4	5.5	7.9	8.2	7.2	6.2	4.9	6.0	7.5	80.6
PRADO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PRADO4	2.1	2.0	2.1	2.1	2.0	2.1	2.0	2.1	2.1	1.9	2.1	2.0	24.7
BETANIA	0.9	102.8	184.3	145.9	96.1	0.0	14.1	101.2	81.1	180.0	112.0	96.5	1114.7
FLORIDA2	6.3	7.0	8.6	7.1	5.7	5.5	5.3	5.2	3.9	3.3	4.0	5.5	67.3
RIOMAYO	7.4	8.9	9.2	9.2	8.9	9.2	8.9	9.2	9.2	8.3	9.2	8.9	106.6
GUAVIO	0.0	0.0	0.0	0.0	0.0	253.3	0.0	129.8	315.2	187.5	355.0	60.4	1301.2
PARAISO	81.4	81.7	104.6	96.5	66.0	66.9	77.0	40.9	9.0	7.1	10.9	34.8	676.9
LAGUACA	95.5	95.8	122.8	113.3	77.5	78.5	90.4	48.0	10.6	8.4	12.8	40.9	794.4
CANOAS	0.9	0.7	0.5	0.6	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	2.9
SALTO	2.2	2.0	1.3	1.6	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	7.4
LAGUNETA	1.5	1.1	0.7	0.9	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	4.3
COLEGIO	5.5	4.5	3.0	3.7	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	17.3
Total	1269.4	1282.2	1334.1	1343.5	1320.3	1362.5	1334.9	1337.1	1220.1	1131.5	1251.7	1228.9	15415.9

CONSEJO NACIONAL DE OPERACIÓN

CNO

MINIMOS OPERATIVOS: Nivel superior 96%PSS e inferior 95%PSS

Hm3

	2001										2002		
	31-May-01	30-Jun-01	31-Jul-01	31-Ago-01	30-Sep-01	31-Oct-01	30-Nov-01	31-Dic-01	31-Ene-02		28-Feb-02	31-Mar-02	30-Abr-02
ANCHICAYA													
MAX TEC	30.10	30.10	30.10	30.10	30.10	30.10	30.10	30.10	30.10		30.10	30.10	30.10
MOS	0.28	0.68	0.98	1.15	1.27	1.48	2.33	2.33	1.80		0.81	0.00	0.00
MOI	0.28	0.68	0.98	1.15	1.27	1.48	2.33	2.33	1.80		0.81	0.00	0.00
MIN TEC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00
BETANIA													
MAX TEC	1019.74	1019.74	1019.74	1019.74	1019.74	1019.74	1019.74	1019.74	1019.74		1019.74	1019.74	1019.74
MOS	8.81	19.49	30.81	44.61	55.53	62.73	79.05	79.05	61.12		27.33	0.00	0.00
MOI	8.81	19.49	30.81	44.61	55.53	62.73	79.05	79.05	61.12		27.33	0.00	0.00
MIN TEC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00
MADRONAL													
MAX TEC	437.50	437.50	437.50	437.50	437.50	437.50	437.50	437.50	437.50		437.50	437.50	437.50
MOS	5.14	13.33	18.76	19.86	18.79	19.11	34.65	34.65	26.97		12.50	0.80	0.80
MOI	5.14	13.33	18.76	19.86	18.79	19.11	34.65	34.65	26.97		12.50	0.80	0.80
MIN TEC	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80		0.80	0.80	0.80
ESMERALDA													
MAX TEC	624.82	624.82	624.82	624.82	624.82	624.82	624.82	624.82	624.82		624.82	624.82	624.82
MOS	3.22	9.42	16.49	26.32	35.70	40.83	48.44	48.44	37.45		16.75	0.00	0.00
MOI	3.22	9.42	16.49	26.32	35.70	40.83	48.44	48.44	37.45		16.75	0.00	0.00
MIN TEC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00
GUAVIO													
MAX TEC	787.32	787.32	787.32	787.32	787.32	787.32	787.32	787.32	787.32		787.32	787.32	787.32
MOS	4.32	11.54	21.25	33.40	43.88	51.01	61.03	61.03	47.19		21.10	0.00	0.00
MOI	4.32	11.54	21.25	33.40	43.88	51.01	61.03	61.03	47.19		21.10	0.00	0.00
MIN TEC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00
MIRAFLORES													
MAX TEC	101.04	101.04	101.04	101.04	101.04	101.04	101.04	101.04	101.04		101.04	101.04	101.04
MOS	6.36	7.25	8.17	9.07	10.06	11.06	13.11	13.11	11.43		8.27	5.72	5.72
MOI	6.36	7.25	8.17	9.07	10.06	11.06	13.11	13.11	11.43		8.27	5.72	5.72
MIN TEC	5.72	5.72	5.72	5.72	5.72	5.72	5.72	5.72	5.72		5.72	5.72	5.72
MUNA													
MAX TEC	41.40	41.40	41.40	41.40	41.40	41.40	41.40	41.40	41.40		41.40	41.40	41.40
MOS	16.71	16.96	17.20	17.47	17.72	17.93	18.43	18.43	17.99		17.17	16.52	16.52
MOI	16.71	16.96	17.20	17.47	17.72	17.93	18.43	18.43	17.99		17.17	16.52	16.52
MIN TEC	16.52	16.52	16.52	16.52	16.52	16.52	16.52	16.52	16.52		16.52	16.52	16.52

CONSEJO NACIONAL DE OPERACIÓN

CNO

MINIMOS OPERATIVOS: Nivel superior 95%PSS e inferior 95%PSS

Hm3

	2001										2002		
	31-May-01	30-Jun-01	31-Jul-01	31-Ago-01	30-Sep-01	31-Oct-01	30-Nov-01	31-Dic-01	31-Ene-02		28-Feb-02	31-Mar-02	30-Abr-02
PENOL													
MAX TEC	1168.94	1168.94	1168.94	1168.94	1168.94	1168.94	1168.94	1168.94	1168.94		1168.94	1168.94	1168.94
MOS	77.93	88.98	99.61	107.78	116.92	127.23	155.31	155.31	135.99		99.59	70.14	70.14
MOI	77.93	88.98	99.61	107.78	116.92	127.23	155.31	155.31	135.99		99.59	70.14	70.14
MIN TEC	70.14	70.14	70.14	70.14	70.14	70.14	70.14	70.14	70.14		70.14	70.14	70.14
PLAYAS													
MAX TEC	56.13	56.13	56.13	56.13	56.13	56.13	56.13	56.13	56.13		56.13	56.13	56.13
MOS	5.81	6.34	6.78	7.12	7.50	8.00	9.36	9.36	8.47		6.79	5.43	5.43
MOI	5.81	6.34	6.78	7.12	7.50	8.00	9.36	9.36	8.47		6.79	5.43	5.43
MIN TEC	5.43	5.43	5.43	5.43	5.43	5.43	5.43	5.43	5.43		5.43	5.43	5.43
PRADO													
MAX TEC	500.00	500.00	500.00	500.00	500.00	500.00	500.00	500.00	500.00		500.00	500.00	500.00
MOS	92.98	103.99	108.58	107.20	103.67	101.32	114.86	114.86	107.52		93.69	82.50	82.50
MOI	92.98	103.99	108.58	107.20	103.67	101.32	114.86	114.86	107.52		93.69	82.50	82.50
MIN TEC	82.50	82.50	82.50	82.50	82.50	82.50	82.50	82.50	82.50		82.50	82.50	82.50
PUNCHINA													
MAX TEC	49.04	49.04	49.04	49.04	49.04	49.04	49.04	49.04	49.04		49.04	49.04	49.04
MOS	0.41	0.95	1.37	1.66	2.00	2.45	3.80	3.80	2.94		1.31	0.00	0.00
MOI	0.41	0.95	1.37	1.66	2.00	2.45	3.80	3.80	2.94		1.31	0.00	0.00
MIN TEC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00
RIOGRANDE2													
MAX TEC	152.14	152.14	152.14	152.14	152.14	152.14	152.14	152.14	152.14		152.14	152.14	152.14
MOS	14.59	16.08	17.34	18.42	19.58	20.82	24.25	24.25	21.81		17.22	13.50	13.50
MOI	14.59	16.08	17.34	18.42	19.58	20.82	24.25	24.25	21.81		17.22	13.50	13.50
MIN TEC	13.50	13.50	13.50	13.50	13.50	13.50	13.50	13.50	13.50		13.50	13.50	13.50
PORCE2													
MAX TEC	175.64	175.64	175.64	175.64	175.64	175.64	175.64	175.64	175.64		175.64	175.64	175.64
MOS	65.08	66.24	67.29	68.22	69.17	70.18	72.89	72.89	70.94		67.25	64.26	64.26
MOI	65.08	66.24	67.29	68.22	69.17	70.18	72.89	72.89	70.94		67.25	64.26	64.26
MIN TEC	64.26	64.26	64.26	64.26	64.26	64.26	64.26	64.26	64.26		64.26	64.26	64.26
SANLORENZO													
MAX TEC	148.85	148.85	148.85	148.85	148.85	148.85	148.85	148.85	148.85		148.85	148.85	148.85
MOS	1.01	2.49	3.86	5.03	6.43	8.12	11.54	11.54	8.92		3.99	0.00	0.00
MOI	1.01	2.49	3.86	5.03	6.43	8.12	11.54	11.54	8.92		3.99	0.00	0.00
MIN TEC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00
TRONERAS													
MAX TEC	26.18	26.18	26.18	26.18	26.18	26.18	26.18	26.18	26.18		26.18	26.18	26.18
MOS	4.40	4.60	4.81	5.02	5.25	5.48	5.95	5.95	5.58		4.84	4.25	4.25
MOI	4.40	4.60	4.81	5.02	5.25	5.48	5.95	5.95	5.58		4.84	4.25	4.25
MIN TEC	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25		4.25	4.25	4.25

CONSEJO NACIONAL DE OPERACIÓN CNO

MINIMOS OPERATIVOS: Nivel superior 95%PSS e inferior 95%PSS
GWh

	2001									2002		
	31-May-01	30-Jun-01	31-Jul-01	31-Ago-01	30-Sep-01	31-Oct-01	30-Nov-01	31-Dic-01	31-Ene-02	28-Feb-02	31-Mar-02	30-Abr-02
ANCHICAYA												
MAX TEC	34.78	34.78	34.78	34.78	34.78	34.78	34.78	34.78	34.78	34.78	34.78	34.78
MOS	0.32	0.78	1.14	1.33	1.47	1.71	2.70	2.70	2.08	0.93	0.00	0.00
MOI	0.32	0.78	1.14	1.33	1.47	1.71	2.70	2.70	2.08	0.93	0.00	0.00
MIN TEC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BETANIA												
MAX TEC	185.91	185.91	185.91	185.91	185.91	185.91	185.91	185.91	185.91	185.91	185.91	185.91
MOS	1.43	3.16	5.01	7.26	9.03	10.21	12.86	12.86	9.94	4.45	0.00	0.00
MOI	1.43	3.16	5.01	7.26	9.03	10.21	12.86	12.86	9.94	4.45	0.00	0.00
MIN TEC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MADRONAL												
MAX TEC	216.32	216.32	216.32	216.32	216.32	216.32	216.32	216.32	216.32	216.32	216.32	216.32
MOS	2.54	6.59	9.28	9.82	9.29	9.45	17.13	17.13	13.33	6.18	0.40	0.40
MOI	2.54	6.59	9.28	9.82	9.29	9.45	17.13	17.13	13.33	6.18	0.40	0.40
MIN TEC	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
ESMERALDA												
MAX TEC	1105.24	1105.24	1105.24	1105.24	1105.24	1105.24	1105.24	1105.24	1105.24	1105.24	1105.24	1105.24
MOS	5.70	16.67	29.17	46.56	63.15	72.22	85.68	85.68	66.24	29.63	0.00	0.00
MOI	5.70	16.67	29.17	46.56	63.15	72.22	85.68	85.68	66.24	29.63	0.00	0.00
MIN TEC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
GUAVIO												
MAX TEC	2173.88	2173.88	2173.88	2173.88	2173.88	2173.88	2173.88	2173.88	2173.88	2173.88	2173.88	2173.88
MOS	11.94	31.67	58.68	92.21	121.16	140.84	168.52	168.52	130.29	58.27	0.00	0.00
MOI	11.94	31.67	58.68	92.21	121.16	140.84	168.52	168.52	130.29	58.27	0.00	0.00
MIN TEC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MIRAFLORES												
MAX TEC	240.28	240.28	240.28	240.28	240.28	240.28	240.28	240.28	240.28	240.28	240.28	240.28
MOS	15.12	17.23	19.43	21.57	23.91	26.30	31.17	31.17	27.19	19.68	13.60	13.60
MOI	15.12	17.23	19.43	21.57	23.91	26.30	31.17	31.17	27.19	19.68	13.60	13.60
MIN TEC	13.60	13.60	13.60	13.60	13.60	13.60	13.60	13.60	13.60	13.60	13.60	13.60
MUNA												
MAX TEC	178.77	178.77	178.77	178.77	178.77	178.77	178.77	178.77	178.77	178.77	178.77	178.77
MOS	72.17	73.22	74.26	75.42	76.50	77.41	79.58	79.58	77.69	74.13	71.33	71.33
MOI	72.17	73.22	74.26	75.42	76.50	77.41	79.58	79.58	77.69	74.13	71.33	71.33
MIN TEC	71.33	71.33	71.33	71.33	71.33	71.33	71.33	71.33	71.33	71.33	71.33	71.33

CONSEJO NACIONAL DE OPERACIÓN

CNO

MINIMOS OPERATIVOS: Nivel superior 95%PSS e inferior 95%PSS

	GWh												
	2001	2001	2001	2001	2001	2001	2001	2001	2001	2001	2002	2002	2002
	31-May-01	30-Jun-01	31-Jul-01	31-Ago-01	30-Sep-01	31-Oct-01	30-Nov-01	31-Dic-01	31-Ene-02		28-Feb-02	31-Mar-02	30-Abr-02
PENOL													
MAX TEC	4393.92	4393.92	4393.92	4393.92	4393.92	4393.92	4393.92	4393.92	4393.92		4393.92	4393.92	4393.92
MOS	292.93	334.48	374.42	405.15	439.51	478.23	583.81	583.81	511.17		374.34	263.63	263.63
MOI	292.93	334.48	374.42	405.15	439.51	478.23	583.81	583.81	511.17		374.34	263.63	263.63
MIN TEC	263.63	263.63	263.63	263.63	263.63	263.63	263.63	263.63	263.63		263.63	263.63	263.63
PLAYAS													
MAX TEC	103.06	103.06	103.06	103.06	103.06	103.06	103.06	103.06	103.06		103.06	103.06	103.06
MOS	10.87	11.64	12.45	13.06	13.78	14.70	17.19	17.19	15.55		12.47	9.97	9.97
MOI	10.87	11.64	12.45	13.06	13.78	14.70	17.19	17.19	15.55		12.47	9.97	9.97
MIN TEC	9.97	9.97	9.97	9.97	9.97	9.97	9.97	9.97	9.97		9.97	9.97	9.97
PRADO													
MAX TEC	57.50	57.50	57.50	57.50	57.50	57.50	57.50	57.50	57.50		57.50	57.50	57.50
MOS	10.69	11.96	12.49	12.33	11.92	11.65	13.21	13.21	12.37		10.77	9.49	9.49
MOI	10.69	11.96	12.49	12.33	11.92	11.65	13.21	13.21	12.37		10.77	9.49	9.49
MIN TEC	9.49	9.49	9.49	9.49	9.49	9.49	9.49	9.49	9.49		9.49	9.49	9.49
PUNCHINA													
MAX TEC	68.42	68.42	68.42	68.42	68.42	68.42	68.42	68.42	68.42		68.42	68.42	68.42
MOS	0.58	1.33	1.91	2.31	2.79	3.42	5.30	5.30	4.10		1.83	0.00	0.00
MOI	0.58	1.33	1.91	2.31	2.79	3.42	5.30	5.30	4.10		1.83	0.00	0.00
MIN TEC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00
RIOGRANDE2													
MAX TEC	414.63	414.63	414.63	414.63	414.63	414.63	414.63	414.63	414.63		414.63	414.63	414.63
MOS	39.77	43.83	47.25	50.21	53.36	56.74	66.08	66.08	59.44		46.82	36.79	36.79
MOI	39.77	43.83	47.25	50.21	53.36	56.74	66.08	66.08	59.44		46.82	36.79	36.79
MIN TEC	36.79	36.79	36.79	36.79	36.79	36.79	36.79	36.79	36.79		36.79	36.79	36.79
PORCE2													
MAX TEC	102.03	102.03	102.03	102.03	102.03	102.03	102.03	102.03	102.03		102.03	102.03	102.03
MOS	37.80	38.48	39.09	39.63	40.18	40.77	42.34	42.34	41.21		39.06	37.33	37.33
MOI	37.80	38.48	39.09	39.63	40.18	40.77	42.34	42.34	41.21		39.06	37.33	37.33
MIN TEC	37.33	37.33	37.33	37.33	37.33	37.33	37.33	37.33	37.33		37.33	37.33	37.33
SANLORENZO													
MAX TEC	365.47	365.47	365.47	365.47	365.47	365.47	365.47	365.47	365.47		365.47	365.47	365.47
MOS	2.48	6.10	9.48	12.35	15.80	19.94	28.33	28.33	21.90		9.80	0.00	0.00
MOI	2.48	6.10	9.48	12.35	15.80	19.94	28.33	28.33	21.90		9.80	0.00	0.00
MIN TEC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00
TRONERAS													
MAX TEC	62.26	62.26	62.26	62.26	62.26	62.26	62.26	62.26	62.26		62.26	62.26	62.26
MOS	10.45	10.94	11.45	11.94	12.48	13.03	14.15	14.15	13.23		11.50	10.11	10.11
MOI	10.45	10.94	11.45	11.94	12.48	13.03	14.15	14.15	13.23		11.50	10.11	10.11
MIN TEC	10.11	10.11	10.11	10.11	10.11	10.11	10.11	10.11	10.11		10.11	10.11	10.11
TOTAL													
MAX TEC	9682.45	9682.45	9682.45	9682.45	9682.45	9682.45	9682.45	9682.45	9682.45		9682.45	9682.45	9682.45
MOS	514.60	608.30	705.49	801.15	894.32	976.60	1168.05	1168.05	1005.73		699.96	452.66	452.66
MOI	514.60	608.30	705.49	801.15	894.32	976.60	1168.05	1168.05	1005.73		699.96	452.66	452.66
MIN TEC	452.66	452.66	452.66	452.66	452.66	452.66	452.66	452.66	452.66		452.66	452.66	452.66

CONSEJO NACIONAL DE OPERACIÓN

CNO

MINIMOS OPERATIVOS: Nivel superior 95%PSS e inferior 95%PSS

	2001										2002		
	31-May-01	30-Jun-01	31-Jul-01	31-Ago-01	30-Sep-01	31-Oct-01	30-Nov-01	31-Dic-01	31-Ene-02		28-Feb-02	31-Mar-02	30-Abr-02
%													
ANCHICAYA													
MAX TEC	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%		100.00%	100.00%	100.00%
MOS	0.93%	2.25%	3.27%	3.81%	4.21%	4.90%	7.75%	7.75%	5.99%		2.68%	0.00%	0.00%
MOI	0.93%	2.25%	3.27%	3.81%	4.21%	4.90%	7.75%	7.75%	5.99%		2.68%	0.00%	0.00%
MIN TEC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%		0.00%	0.00%	0.00%
BETANIA													
MAX TEC	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%		100.00%	100.00%	100.00%
MOS	0.86%	1.91%	3.02%	4.37%	5.45%	6.15%	7.75%	7.75%	5.99%		2.68%	0.00%	0.00%
MOI	0.86%	1.91%	3.02%	4.37%	5.45%	6.15%	7.75%	7.75%	5.99%		2.68%	0.00%	0.00%
MIN TEC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%		0.00%	0.00%	0.00%
MADRONAL													
MAX TEC	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%		100.00%	100.00%	100.00%
MOS	1.18%	3.05%	4.29%	4.54%	4.29%	4.37%	7.92%	7.92%	6.16%		2.68%	0.18%	0.18%
MOI	1.18%	3.05%	4.29%	4.54%	4.29%	4.37%	7.92%	7.92%	6.16%		2.68%	0.18%	0.18%
MIN TEC	0.18%	0.18%	0.18%	0.18%	0.18%	0.18%	0.18%	0.18%	0.18%		0.18%	0.18%	0.18%
ESMERALDA													
MAX TEC	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%		100.00%	100.00%	100.00%
MOS	0.52%	1.51%	2.64%	4.21%	5.71%	6.53%	7.75%	7.75%	5.99%		2.68%	0.00%	0.00%
MOI	0.52%	1.51%	2.64%	4.21%	5.71%	6.53%	7.75%	7.75%	5.99%		2.68%	0.00%	0.00%
MIN TEC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%		0.00%	0.00%	0.00%
GUAVIO													
MAX TEC	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%		100.00%	100.00%	100.00%
MOS	0.55%	1.47%	2.70%	4.24%	5.57%	6.48%	7.75%	7.75%	5.99%		2.68%	0.00%	0.00%
MOI	0.55%	1.47%	2.70%	4.24%	5.57%	6.48%	7.75%	7.75%	5.99%		2.68%	0.00%	0.00%
MIN TEC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%		0.00%	0.00%	0.00%
MIRAFLORES													
MAX TEC	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%		100.00%	100.00%	100.00%
MOS	6.29%	7.17%	8.09%	8.98%	9.95%	10.95%	12.97%	12.97%	11.32%		8.18%	5.66%	5.66%
MOI	6.29%	7.17%	8.09%	8.98%	9.95%	10.95%	12.97%	12.97%	11.32%		8.18%	5.66%	5.66%
MIN TEC	5.66%	5.66%	5.66%	5.66%	5.66%	5.66%	5.66%	5.66%	5.66%		5.66%	5.66%	5.66%
MUNA													
MAX TEC	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%		100.00%	100.00%	100.00%
MOS	40.37%	40.96%	41.54%	42.19%	42.79%	43.30%	44.52%	44.52%	43.46%		41.47%	39.90%	39.90%
MOI	40.37%	40.96%	41.54%	42.19%	42.79%	43.30%	44.52%	44.52%	43.46%		41.47%	39.90%	39.90%
MIN TEC	39.90%	39.90%	39.90%	39.90%	39.90%	39.90%	39.90%	39.90%	39.90%		39.90%	39.90%	39.90%

CONSEJO NACIONAL DE OPERACIÓN

CNO

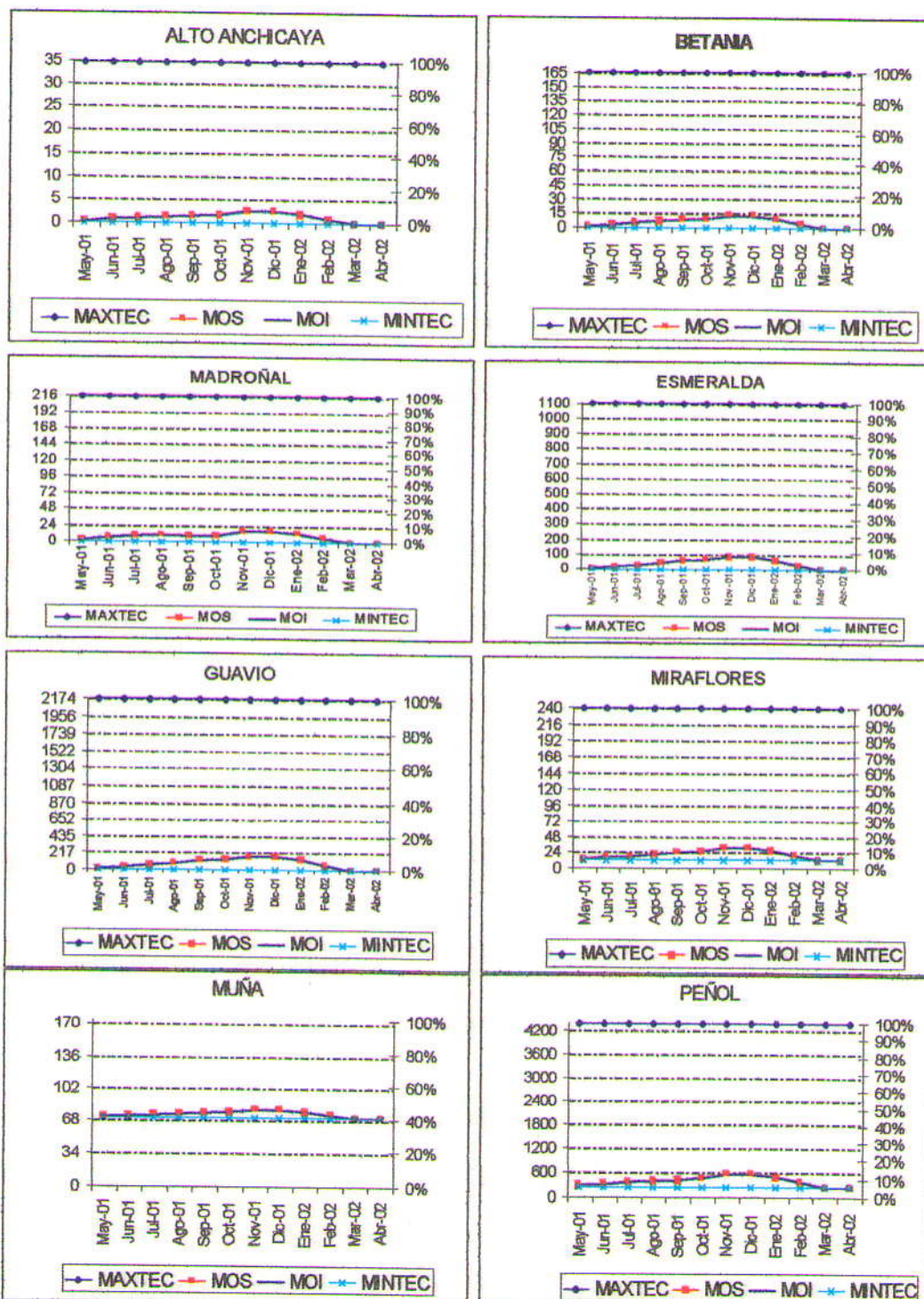
MINIMOS OPERATIVOS: Nivel superior 95%PSS e inferior 95%PSS

%

	2001										2002		
	31-May-01	30-Jun-01	31-Jul-01	31-Ago-01	30-Sep-01	31-Oct-01	30-Nov-01	31-Dic-01	31-Ene-02		28-Feb-02	31-Mar-02	30-Abr-02
PENOL													
MAX TEC	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%		100.00%	100.00%	100.00%
MOS	6.67%	7.61%	8.52%	9.22%	10.00%	10.88%	13.26%	13.26%	11.63%		8.52%	6.00%	6.00%
MOI	6.67%	7.61%	8.52%	9.22%	10.00%	10.88%	13.26%	13.26%	11.63%		8.52%	6.00%	6.00%
MIN TEC	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%		6.00%	6.00%	6.00%
PLAYAS													
MAX TEC	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%		100.00%	100.00%	100.00%
MOS	10.35%	11.30%	12.08%	12.68%	13.37%	14.26%	16.66%	16.66%	15.09%		12.10%	9.67%	9.67%
MOI	10.35%	11.30%	12.08%	12.68%	13.37%	14.26%	16.66%	16.66%	15.09%		12.10%	9.67%	9.67%
MIN TEC	9.67%	9.67%	9.67%	9.67%	9.67%	9.67%	9.67%	9.67%	9.67%		9.67%	9.67%	9.67%
PRADO													
MAX TEC	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%		100.00%	100.00%	100.00%
MOS	18.60%	20.80%	21.72%	21.44%	20.73%	20.26%	22.97%	22.97%	21.50%		18.74%	16.50%	16.50%
MOI	18.60%	20.80%	21.72%	21.44%	20.73%	20.26%	22.97%	22.97%	21.50%		18.74%	16.50%	16.50%
MIN TEC	16.50%	16.50%	16.50%	16.50%	16.50%	16.50%	16.50%	16.50%	16.50%		16.50%	16.50%	16.50%
PUNCHINA													
MAX TEC	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%		100.00%	100.00%	100.00%
MOS	0.84%	1.95%	2.79%	3.36%	4.08%	4.99%	7.75%	7.75%	5.99%		2.68%	0.00%	0.00%
MOI	0.84%	1.95%	2.79%	3.36%	4.08%	4.99%	7.75%	7.75%	5.99%		2.68%	0.00%	0.00%
MIN TEC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%		0.00%	0.00%	0.00%
RIOGRANDE2													
MAX TEC	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%		100.00%	100.00%	100.00%
MOS	9.59%	10.57%	11.39%	12.11%	12.67%	13.66%	15.94%	15.94%	14.33%		11.32%	8.87%	8.87%
MOI	9.59%	10.57%	11.39%	12.11%	12.67%	13.66%	15.94%	15.94%	14.33%		11.32%	8.87%	8.87%
MIN TEC	8.87%	8.87%	8.87%	8.87%	8.87%	8.87%	8.87%	8.87%	8.87%		8.87%	8.87%	8.87%
PORCE2													
MAX TEC	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%		100.00%	100.00%	100.00%
MOS	37.06%	37.72%	38.31%	38.84%	39.38%	39.86%	41.50%	41.50%	40.36%		38.29%	36.59%	36.59%
MOI	37.05%	37.72%	38.31%	38.84%	39.38%	39.86%	41.50%	41.50%	40.36%		38.29%	36.59%	36.59%
MIN TEC	36.59%	36.59%	36.59%	36.59%	36.59%	36.59%	36.59%	36.59%	36.59%		36.59%	36.59%	36.59%
SANLORENZO													
MAX TEC	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%		100.00%	100.00%	100.00%
MOS	0.68%	1.67%	2.60%	3.38%	4.32%	5.45%	7.75%	7.75%	5.99%		2.68%	0.00%	0.00%
MOI	0.68%	1.67%	2.60%	3.38%	4.32%	5.45%	7.75%	7.75%	5.99%		2.68%	0.00%	0.00%
MIN TEC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%		0.00%	0.00%	0.00%
TRONERAS													
MAX TEC	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%		100.00%	100.00%	100.00%
MOS	16.79%	17.57%	18.38%	19.17%	20.04%	20.92%	22.72%	22.72%	21.25%		18.48%	16.23%	16.23%
MOI	16.79%	17.57%	18.38%	19.17%	20.04%	20.92%	22.72%	22.72%	21.25%		18.48%	16.23%	16.23%
MIN TEC	16.23%	16.23%	16.23%	16.23%	16.23%	16.23%	16.23%	16.23%	16.23%		16.23%	16.23%	16.23%
URRA1													
MAX TEC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%		0.00%	0.00%	0.00%
MOS	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%		0.00%	0.00%	0.00%
MOI	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%		0.00%	0.00%	0.00%
MIN TEC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%		0.00%	0.00%	0.00%
AGREGADO													
MAX TEC	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%		100.00%	100.00%	100.00%
MOS	5.31%	6.28%	7.28%	8.27%	9.24%	10.06%	12.06%	12.06%	10.39%		7.23%	4.67%	4.67%
MOI	5.31%	6.28%	7.28%	8.27%	9.24%	10.06%	12.06%	12.06%	10.39%		7.23%	4.67%	4.67%
MIN TEC	4.67%	4.67%	4.67%	4.67%	4.67%	4.67%	4.67%	4.67%	4.67%		4.67%	4.67%	4.67%

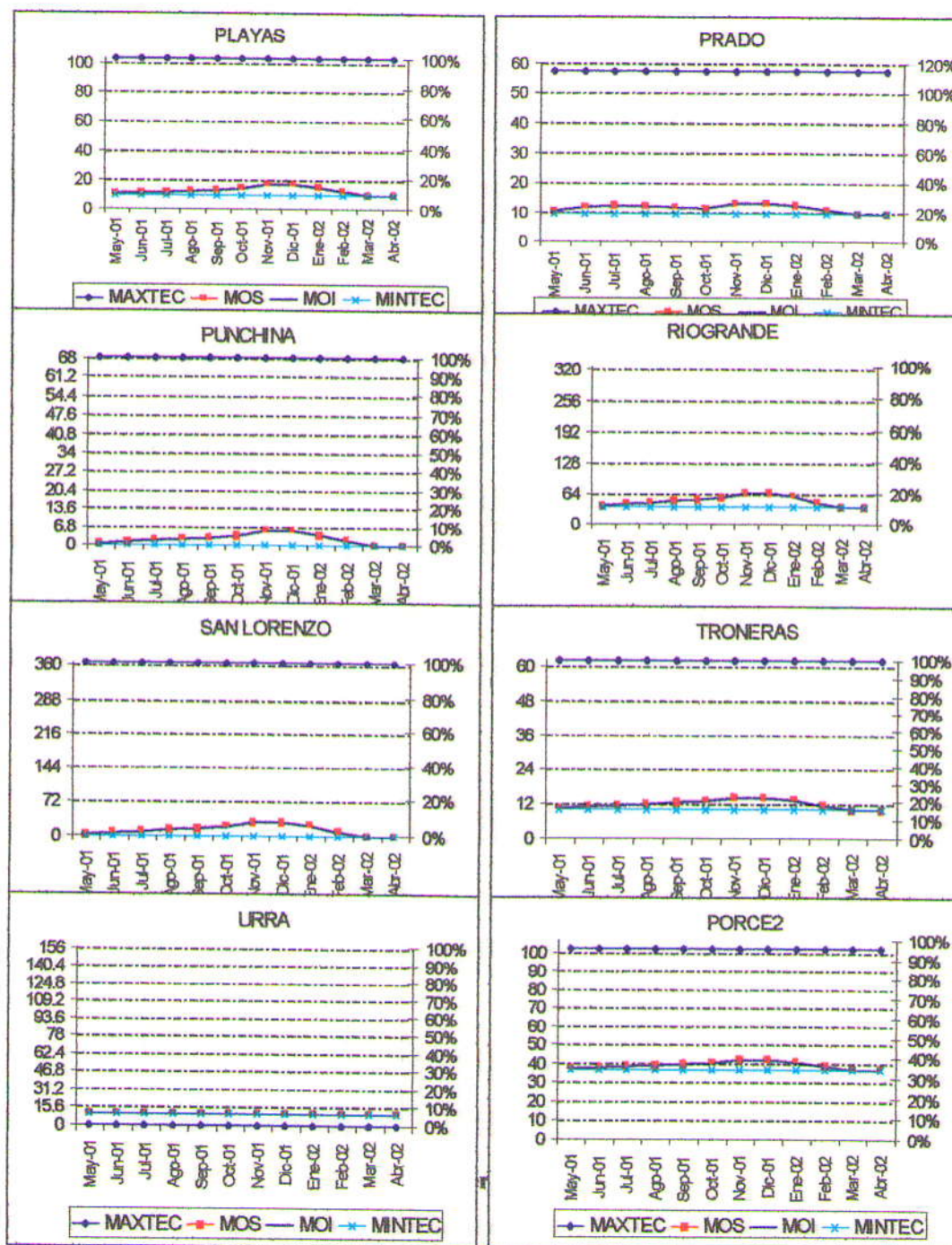
CONSEJO NACIONAL DE OPERACIÓN CNO

Niveles mínimos operativos de embalses (GWh y %)

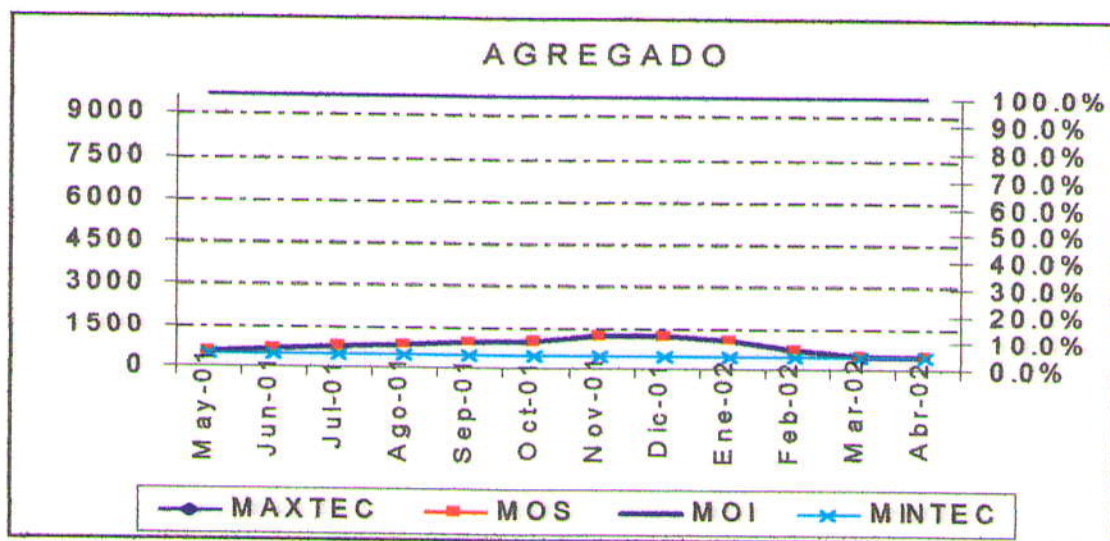
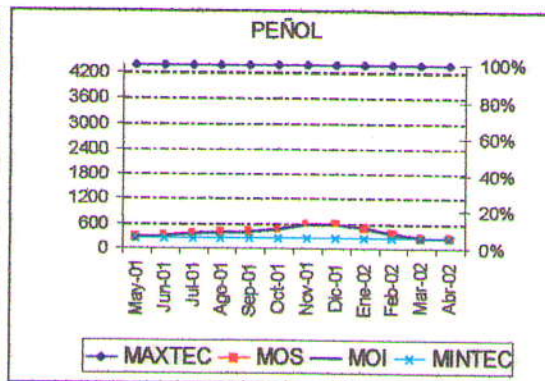
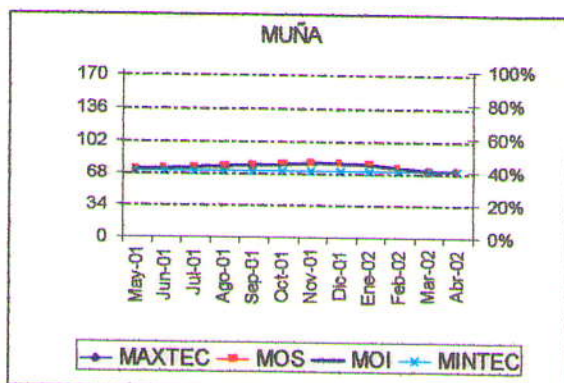


CONSEJO NACIONAL DE OPERACIÓN CNO

Niveles mínimos operativos de embalses (GWh y %)



CONSEJO NACIONAL DE OPERACIÓN CNO



CONSEJO NACIONAL DE OPERACIÓN CNO

ANEXO 3: RESOLUCION CREG 01-034

**NIVELES MINIMOS OPERATIVOS POR EMBALSE
DESPUES DE APLICAR LA RESOLUCION SOBRE
ALTO ANCHICAYA, BETANIA Y TRONERAS**

CONSEJO NACIONAL DE OPERACIÓN

CNO

MINIMOS OPERATIVOS: Nivel superior 95%PSS e inferior 95%PSS

Hm3

	2001										2002		
	31-May-01	30-Jun-01	31-Jul-01	31-Ago-01	30-Sep-01	31-Oct-01	30-Nov-01	31-Dic-01	31-Ene-02		28-Feb-02	31-Mar-02	30-Abr-02
ANCHICAYA													
MAX TEC	30.10	30.10	30.10	30.10	30.10	30.10	30.10	30.10	30.10		30.10	30.10	30.10
MOS	4.52	4.52	4.52	4.52	4.52	4.52	4.52	4.52	4.52		4.52	4.52	4.52
MOI	0.28	0.68	0.98	1.15	1.27	1.48	2.33	2.33	1.80		0.81	0.00	0.00
MIN TEC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00
BETANIA													
MAX TEC	1019.74	1019.74	1019.74	1019.74	1019.74	1019.74	1019.74	1019.74	1019.74		1019.74	1019.74	1019.74
MOS	152.96	152.96	152.96	152.96	152.96	152.96	152.96	152.96	152.96		152.96	152.96	152.96
MOI	8.81	19.43	30.81	44.61	55.63	62.73	79.05	79.05	61.12		27.33	0.00	0.00
MIN TEC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00
MADRONAL													
MAX TEC	437.50	437.50	437.50	437.50	437.50	437.50	437.50	437.50	437.50		437.50	437.50	437.50
MOS	5.14	13.33	18.76	19.86	18.79	19.11	34.65	34.65	26.97		12.50	0.80	0.80
MOI	5.14	13.33	18.76	19.86	18.79	19.11	34.65	34.65	26.97		12.50	0.80	0.80
MIN TEC	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80		0.80	0.80	0.80
ESMERALDA													
MAX TEC	624.82	624.82	624.82	624.82	624.82	624.82	624.82	624.82	624.82		624.82	624.82	624.82
MOS	3.22	9.42	16.49	26.32	35.70	40.83	48.44	48.44	37.45		16.75	0.00	0.00
MOI	3.22	9.42	16.49	26.32	35.70	40.83	48.44	48.44	37.45		16.75	0.00	0.00
MIN TEC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00
GUAVIO													
MAX TEC	787.32	787.32	787.32	787.32	787.32	787.32	787.32	787.32	787.32		787.32	787.32	787.32
MOS	4.32	11.54	21.25	33.40	43.88	51.01	61.03	61.03	47.19		21.10	0.00	0.00
MOI	4.32	11.54	21.25	33.40	43.88	51.01	61.03	61.03	47.19		21.10	0.00	0.00
MIN TEC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00
MIRAFLORES													
MAX TEC	101.04	101.04	101.04	101.04	101.04	101.04	101.04	101.04	101.04		101.04	101.04	101.04
MOS	6.36	7.25	8.17	9.07	10.06	11.06	13.11	13.11	11.43		8.27	5.72	5.72
MOI	6.36	7.25	8.17	9.07	10.06	11.06	13.11	13.11	11.43		8.27	5.72	5.72
MIN TEC	5.72	5.72	5.72	5.72	5.72	5.72	5.72	5.72	5.72		5.72	5.72	5.72
MUNA													
MAX TEC	41.40	41.40	41.40	41.40	41.40	41.40	41.40	41.40	41.40		41.40	41.40	41.40
MOS	16.71	16.96	17.20	17.47	17.72	17.93	18.43	18.43	17.99		17.17	16.52	16.52
MOI	16.71	16.96	17.20	17.47	17.72	17.93	18.43	18.43	17.99		17.17	16.52	16.52
MIN TEC	16.52	16.52	16.52	16.52	16.52	16.52	16.52	16.52	16.52		16.52	16.52	16.52

CONSEJO NACIONAL DE OPERACIÓN

CNO

MINIMOS OPERATIVOS: Nivel superior 95%PSS e inferior 95%PSS

Hm3

	2001										2002		
	31-May-01	30-Jun-01	31-Jul-01	31-Ago-01	30-Sep-01	31-Oct-01	30-Nov-01	31-Dic-01	31-Ene-02		28-Feb-02	31-Mar-02	30-Abr-02
PENOL													
MAX TEC	1168.94	1168.94	1168.94	1168.94	1168.94	1168.94	1168.94	1168.94	1168.94		1168.94	1168.94	1168.94
MOS	77.93	88.98	99.61	107.78	116.92	127.23	155.31	155.31	135.99		99.59	70.14	70.14
MOI	77.93	88.98	99.61	107.78	116.92	127.23	155.31	155.31	135.99		99.59	70.14	70.14
MIN TEC	70.14	70.14	70.14	70.14	70.14	70.14	70.14	70.14	70.14		70.14	70.14	70.14
PLAYAS													
MAX TEC	58.13	58.13	58.13	58.13	58.13	58.13	58.13	58.13	58.13		58.13	58.13	58.13
MOS	5.81	6.34	6.78	7.12	7.50	8.00	9.36	9.36	8.47		6.79	5.43	5.43
MOI	5.81	6.34	6.78	7.12	7.50	8.00	9.36	9.36	8.47		6.79	5.43	5.43
MIN TEC	5.43	5.43	5.43	5.43	5.43	5.43	5.43	5.43	5.43		5.43	5.43	5.43
PRADO													
MAX TEC	500.00	500.00	500.00	500.00	500.00	500.00	500.00	500.00	500.00		500.00	500.00	500.00
MOS	92.98	103.99	108.58	107.20	103.67	101.32	114.86	114.86	107.52		93.69	82.50	82.50
MOI	92.98	103.99	108.58	107.20	103.67	101.32	114.86	114.86	107.52		93.69	82.50	82.50
MIN TEC	82.50	82.50	82.50	82.50	82.50	82.50	82.50	82.50	82.50		82.50	82.50	82.50
PUNCHINA													
MAX TEC	49.04	49.04	49.04	49.04	49.04	49.04	49.04	49.04	49.04		49.04	49.04	49.04
MOS	0.41	0.95	1.37	1.66	2.00	2.45	3.80	3.80	2.94		1.31	0.00	0.00
MOI	0.41	0.95	1.37	1.66	2.00	2.45	3.80	3.80	2.94		1.31	0.00	0.00
MIN TEC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00
RIOGRANDE2													
MAX TEC	152.14	152.14	152.14	152.14	152.14	152.14	152.14	152.14	152.14		152.14	152.14	152.14
MOS	14.59	16.08	17.34	18.42	19.58	20.82	24.25	24.25	21.81		17.22	13.50	13.50
MOI	14.59	16.08	17.34	18.42	19.58	20.82	24.25	24.25	21.81		17.22	13.50	13.50
MIN TEC	13.50	13.50	13.50	13.50	13.50	13.50	13.50	13.50	13.50		13.50	13.50	13.50
PORCE2													
MAX TEC	175.64	175.64	175.64	175.64	175.64	175.64	175.64	175.64	175.64		175.64	175.64	175.64
MOS	65.08	68.24	67.29	68.22	69.17	70.18	72.89	72.89	70.94		67.25	64.26	64.26
MOI	65.08	68.24	67.29	68.22	69.17	70.18	72.89	72.89	70.94		67.25	64.26	64.26
MIN TEC	64.26	64.26	64.26	64.26	64.26	64.26	64.26	64.26	64.26		64.26	64.26	64.26
SANLORENZO													
MAX TEC	148.85	148.85	148.85	148.85	148.85	148.85	148.85	148.85	148.85		148.85	148.85	148.85
MOS	1.01	2.49	3.86	5.03	6.43	8.12	11.54	11.54	8.92		3.99	0.00	0.00
MOI	1.01	2.49	3.86	5.03	6.43	8.12	11.54	11.54	8.92		3.99	0.00	0.00
MIN TEC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00
TRONERAS													
MAX TEC	26.18	26.18	26.18	26.18	26.18	26.18	26.18	26.18	26.18		26.18	26.18	26.18
MOS	4.40	4.60	4.81	5.02	5.25	5.48	5.95	5.95	5.56		4.84	4.25	4.25
MOI	4.40	4.60	4.81	5.02	5.25	5.48	5.95	5.95	5.56		4.84	4.25	4.25
MIN TEC	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25		4.25	4.25	4.25

CONSEJO NACIONAL DE OPERACIÓN CNO

MINIMOS OPERATIVOS: Nivel superior 95%PSS e inferior 95%PSS
GWh

	2001									2002		
	31-May-01	30-Jun-01	31-Jul-01	31-Ago-01	30-Sep-01	31-Oct-01	30-Nov-01	31-Dic-01	31-Ene-02	28-Feb-02	31-Mar-02	30-Abr-02
ANCHICAYA												
MAX TEC	34.78	34.78	34.78	34.78	34.78	34.78	34.78	34.78	34.78	34.78	34.78	34.78
MOS	5.22	5.22	5.22	5.22	5.22	5.22	5.22	5.22	5.22	5.22	5.22	5.22
MOI	0.32	0.78	1.14	1.33	1.47	1.71	2.70	2.70	2.08	0.93	0.00	0.00
MIN TEC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BETANIA												
MAX TEC	165.91	165.91	165.91	165.91	165.91	165.91	165.91	165.91	165.91	165.91	165.91	165.91
MOS	24.89	24.89	24.89	24.89	24.89	24.89	24.89	24.89	24.89	24.89	24.89	24.89
MOI	1.43	3.18	5.01	7.28	9.03	10.21	12.88	12.88	9.94	4.45	0.00	0.00
MIN TEC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MADRONAL												
MAX TEC	216.32	216.32	216.32	216.32	216.32	216.32	216.32	216.32	216.32	216.32	216.32	216.32
MOS	2.54	6.59	9.28	9.82	9.29	9.45	17.13	17.13	13.39	6.18	0.40	0.40
MOI	2.54	6.59	9.28	9.82	9.29	9.45	17.13	17.13	13.39	6.18	0.40	0.40
MIN TEC	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
ESMERALDA												
MAX TEC	1105.24	1105.24	1105.24	1105.24	1105.24	1105.24	1105.24	1105.24	1105.24	1105.24	1105.24	1105.24
MOS	5.70	16.67	29.17	46.56	63.15	72.22	85.68	85.68	66.24	29.63	0.00	0.00
MOI	5.70	16.67	29.17	46.56	63.15	72.22	85.68	85.68	66.24	29.63	0.00	0.00
MIN TEC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
GUAVIO												
MAX TEC	2173.88	2173.88	2173.88	2173.88	2173.88	2173.88	2173.88	2173.88	2173.88	2173.88	2173.88	2173.88
MOS	11.94	31.87	58.68	92.21	121.16	140.84	168.52	168.52	130.29	58.27	0.00	0.00
MOI	11.94	31.87	58.68	92.21	121.16	140.84	168.52	168.52	130.29	58.27	0.00	0.00
MIN TEC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MIRAFLORES												
MAX TEC	240.28	240.28	240.28	240.28	240.28	240.28	240.28	240.28	240.28	240.28	240.28	240.28
MOS	15.12	17.23	19.43	21.57	23.91	26.30	31.17	31.17	27.19	19.68	13.60	13.60
MOI	15.12	17.23	19.43	21.57	23.91	26.30	31.17	31.17	27.19	19.68	13.60	13.60
MIN TEC	13.60	13.60	13.60	13.60	13.60	13.60	13.60	13.60	13.60	13.60	13.60	13.60
MUNA												
MAX TEC	178.77	178.77	178.77	178.77	178.77	178.77	178.77	178.77	178.77	178.77	178.77	178.77
MOS	72.17	73.22	74.26	75.42	76.50	77.41	79.58	79.58	77.69	74.13	71.33	71.33
MOI	72.17	73.22	74.26	75.42	76.50	77.41	79.58	79.58	77.69	74.13	71.33	71.33
MIN TEC	71.33	71.33	71.33	71.33	71.33	71.33	71.33	71.33	71.33	71.33	71.33	71.33

CONSEJO NACIONAL DE OPERACIÓN

CNO

MINIMOS OPERATIVOS: Nivel superior 95%PSS e inferior 95%PSS
GWh

	2001										2002		
	31-May-01	30-Jun-01	31-Jul-01	31-Ago-01	30-Sep-01	31-Oct-01	30-Nov-01	31-Dic-01	31-Ene-02		28-Feb-02	31-Mar-02	30-Abr-02
PENOL													
MAX TEC	4393.92	4393.92	4393.92	4393.92	4393.92	4393.92	4393.92	4393.92	4393.92		4393.92	4393.92	4393.92
MOS	292.93	334.48	374.42	405.15	439.51	478.23	583.81	583.81	511.17		374.34	263.63	263.63
MOI	292.93	334.48	374.42	405.15	439.51	478.23	583.81	583.81	511.17		374.34	263.63	263.63
MIN TEC	263.63	263.63	263.63	263.63	263.63	263.63	263.63	263.63	263.63		263.63	263.63	263.63
PLAYAS													
MAX TEC	103.06	103.06	103.06	103.06	103.06	103.06	103.06	103.06	103.06		103.06	103.06	103.06
MOS	10.67	11.64	12.45	13.06	13.78	14.70	17.19	17.19	15.55		12.47	9.97	9.97
MOI	10.67	11.64	12.45	13.06	13.78	14.70	17.19	17.19	15.55		12.47	9.97	9.97
MIN TEC	9.97	9.97	9.97	9.97	9.97	9.97	9.97	9.97	9.97		9.97	9.97	9.97
PRADO													
MAX TEC	57.50	57.50	57.50	57.50	57.50	57.50	57.50	57.50	57.50		57.50	57.50	57.50
MOS	10.69	11.96	12.49	12.33	11.92	11.65	13.21	13.21	12.37		10.77	9.49	9.49
MOI	10.69	11.96	12.49	12.33	11.92	11.65	13.21	13.21	12.37		10.77	9.49	9.49
MIN TEC	9.49	9.49	9.49	9.49	9.49	9.49	9.49	9.49	9.49		9.49	9.49	9.49
PUNCHINA													
MAX TEC	68.42	68.42	68.42	68.42	68.42	68.42	68.42	68.42	68.42		68.42	68.42	68.42
MOS	0.58	1.33	1.91	2.31	2.79	3.42	5.30	5.30	4.10		1.83	0.00	0.00
MOI	0.58	1.33	1.91	2.31	2.79	3.42	5.30	5.30	4.10		1.83	0.00	0.00
MIN TEC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00
RIOGRANDE2													
MAX TEC	414.63	414.63	414.63	414.63	414.63	414.63	414.63	414.63	414.63		414.63	414.63	414.63
MOS	39.77	43.83	47.25	50.21	53.36	56.74	66.08	66.08	59.44		46.92	36.79	36.79
MOI	39.77	43.83	47.25	50.21	53.36	56.74	66.08	66.08	59.44		46.92	36.79	36.79
MIN TEC	36.79	36.79	36.79	36.79	36.79	36.79	36.79	36.79	36.79		36.79	36.79	36.79
PORCE2													
MAX TEC	102.03	102.03	102.03	102.03	102.03	102.03	102.03	102.03	102.03		102.03	102.03	102.03
MOS	37.80	38.48	39.09	39.63	40.18	40.77	42.34	42.34	41.21		39.06	37.33	37.33
MOI	37.80	38.48	39.09	39.63	40.18	40.77	42.34	42.34	41.21		39.06	37.33	37.33
MIN TEC	37.33	37.33	37.33	37.33	37.33	37.33	37.33	37.33	37.33		37.33	37.33	37.33
SANLORENZO													
MAX TEC	365.47	365.47	365.47	365.47	365.47	365.47	365.47	365.47	365.47		365.47	365.47	365.47
MOS	2.48	6.10	9.48	12.35	15.80	19.94	28.33	28.33	21.90		9.80	0.00	0.00
MOI	2.48	6.10	9.48	12.35	15.80	19.94	28.33	28.33	21.90		9.80	0.00	0.00
MIN TEC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00
TRONERAS													
MAX TEC	62.26	62.26	62.26	62.26	62.26	62.26	62.26	62.26	62.26		62.26	62.26	62.26
MOS	10.45	10.94	11.45	11.94	12.48	13.03	14.15	14.15	13.23		11.50	10.11	10.11
MOI	10.45	10.94	11.45	11.94	12.48	13.03	14.15	14.15	13.23		11.50	10.11	10.11
MIN TEC	10.11	10.11	10.11	10.11	10.11	10.11	10.11	10.11	10.11		10.11	10.11	10.11
URRA1													
MAX TEC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00
MOS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00
MOI	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00
MIN TEC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00
TOTAL													
MAX TEC	9682.45	9682.45	9682.45	9682.45	9682.45	9682.45	9682.45	9682.45	9682.45		9682.45	9682.45	9682.45
MOS	542.95	634.45	729.44	822.66	913.92	994.79	1182.59	1182.59	1023.80		724.68	482.76	482.76
MOI	514.60	608.30	705.49	801.15	894.32	976.60	1168.05	1168.05	1005.73		699.96	452.66	452.66
MIN TEC	452.66	452.66	452.66	452.66	452.66	452.66	452.66	452.66	452.66		452.66	452.66	452.66

CONSEJO NACIONAL DE OPERACIÓN

CNO

MINIMOS OPERATIVOS: Nivel superior 95%PSS e inferior 95%PSS

	2001										2002		
	31-May-01	30-Jun-01	31-Jul-01	31-Ago-01	30-Sep-01	31-Oct-01	30-Nov-01	31-Dic-01	31-Ene-02		28-Feb-02	31-Mar-02	30-Abr-02
ANCHICAYA													
MAX TEC	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%		100.00%	100.00%	100.00%
MOS	15.00%	15.00%	15.00%	15.00%	15.00%	15.00%	15.00%	15.00%	15.00%		15.00%	15.00%	15.00%
MOI	0.93%	2.25%	3.27%	3.81%	4.21%	4.90%	7.75%	7.75%	5.99%		2.68%	0.00%	0.00%
MIN TEC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%		0.00%	0.00%	0.00%
BETANIA													
MAX TEC	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%		100.00%	100.00%	100.00%
MOS	15.00%	15.00%	15.00%	15.00%	15.00%	15.00%	15.00%	15.00%	15.00%		15.00%	15.00%	15.00%
MOI	0.86%	1.91%	3.02%	4.37%	5.45%	6.15%	7.75%	7.75%	5.99%		2.68%	0.00%	0.00%
MIN TEC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%		0.00%	0.00%	0.00%
MADRONAL													
MAX TEC	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%		100.00%	100.00%	100.00%
MOS	1.18%	3.05%	4.29%	4.54%	4.29%	4.37%	7.92%	7.92%	6.16%		2.88%	0.18%	0.18%
MOI	1.18%	3.05%	4.29%	4.54%	4.29%	4.37%	7.92%	7.92%	6.16%		2.88%	0.18%	0.18%
MIN TEC	0.18%	0.18%	0.18%	0.18%	0.18%	0.18%	0.18%	0.18%	0.18%		0.18%	0.18%	0.18%
ESMERALDA													
MAX TEC	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%		100.00%	100.00%	100.00%
MOS	0.52%	1.51%	2.64%	4.21%	5.71%	6.53%	7.75%	7.75%	5.99%		2.68%	0.00%	0.00%
MOI	0.52%	1.51%	2.64%	4.21%	5.71%	6.53%	7.75%	7.75%	5.99%		2.68%	0.00%	0.00%
MIN TEC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%		0.00%	0.00%	0.00%
GUAVIO													
MAX TEC	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%		100.00%	100.00%	100.00%
MOS	0.55%	1.47%	2.70%	4.24%	5.57%	6.48%	7.75%	7.75%	5.99%		2.68%	0.00%	0.00%
MOI	0.55%	1.47%	2.70%	4.24%	5.57%	6.48%	7.75%	7.75%	5.99%		2.68%	0.00%	0.00%
MIN TEC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%		0.00%	0.00%	0.00%
MIRAFLORES													
MAX TEC	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%		100.00%	100.00%	100.00%
MOS	6.29%	7.17%	8.09%	8.98%	9.95%	10.95%	12.97%	12.97%	11.32%		8.19%	5.66%	5.66%
MOI	6.29%	7.17%	8.09%	8.98%	9.95%	10.95%	12.97%	12.97%	11.32%		8.19%	5.66%	5.66%
MIN TEC	5.66%	5.66%	5.66%	5.66%	5.66%	5.66%	5.66%	5.66%	5.66%		5.66%	5.66%	5.66%
MUNA													
MAX TEC	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%		100.00%	100.00%	100.00%
MOS	40.37%	40.96%	41.54%	42.19%	42.79%	43.30%	44.52%	44.52%	43.46%		41.47%	39.90%	39.90%
MOI	40.37%	40.96%	41.54%	42.19%	42.79%	43.30%	44.52%	44.52%	43.46%		41.47%	39.90%	39.90%
MIN TEC	39.90%	39.90%	39.90%	39.90%	39.90%	39.90%	39.90%	39.90%	39.90%		39.90%	39.90%	39.90%

CONSEJO NACIONAL DE OPERACIÓN

CNO

MINIMOS OPERATIVOS: Nivel superior 95%PSS e inferior 95%PSS

	2001										2002		
	31-May-01	30-Jun-01	31-Jul-01	31-Ago-01	30-Sep-01	31-Oct-01	30-Nov-01	31-Dic-01	31-Ene-02		28-Feb-02	31-Mar-02	30-Abr-02
PENOL													
MAX TEC	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%		100.00%	100.00%	100.00%
MOS	6.67%	7.61%	8.52%	9.22%	10.00%	10.88%	13.29%	13.29%	11.63%		8.52%	6.00%	6.00%
MOI	6.67%	7.61%	8.52%	9.22%	10.00%	10.88%	13.29%	13.29%	11.63%		8.52%	6.00%	6.00%
MIN TEC	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%		6.00%	6.00%	6.00%
PLAYAS													
MAX TEC	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%		100.00%	100.00%	100.00%
MOS	10.35%	11.30%	12.08%	12.68%	13.37%	14.26%	16.68%	16.68%	15.06%		12.10%	9.67%	9.67%
MOI	10.35%	11.30%	12.08%	12.68%	13.37%	14.26%	16.68%	16.68%	15.06%		12.10%	9.67%	9.67%
MIN TEC	9.67%	9.67%	9.67%	9.67%	9.67%	9.67%	9.67%	9.67%	9.67%		9.67%	9.67%	9.67%
PRADO													
MAX TEC	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%		100.00%	100.00%	100.00%
MOS	18.60%	20.80%	21.72%	21.44%	20.73%	20.26%	22.97%	22.97%	21.50%		18.74%	16.50%	16.50%
MOI	18.60%	20.80%	21.72%	21.44%	20.73%	20.26%	22.97%	22.97%	21.50%		18.74%	16.50%	16.50%
MIN TEC	16.50%	16.50%	16.50%	16.50%	16.50%	16.50%	16.50%	16.50%	16.50%		16.50%	16.50%	16.50%
PUNCHINA													
MAX TEC	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%		100.00%	100.00%	100.00%
MOS	0.84%	1.95%	2.79%	3.38%	4.08%	4.99%	7.75%	7.75%	5.99%		2.68%	0.00%	0.00%
MOI	0.84%	1.95%	2.79%	3.38%	4.08%	4.99%	7.75%	7.75%	5.99%		2.68%	0.00%	0.00%
MIN TEC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%		0.00%	0.00%	0.00%
RIOGRANDE2													
MAX TEC	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%		100.00%	100.00%	100.00%
MOS	9.59%	10.57%	11.39%	12.11%	12.87%	13.68%	15.94%	15.94%	14.33%		11.32%	8.87%	8.87%
MOI	9.59%	10.57%	11.39%	12.11%	12.87%	13.68%	15.94%	15.94%	14.33%		11.32%	8.87%	8.87%
MIN TEC	8.87%	8.87%	8.87%	8.87%	8.87%	8.87%	8.87%	8.87%	8.87%		8.87%	8.87%	8.87%
PORCE2													
MAX TEC	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%		100.00%	100.00%	100.00%
MOS	37.05%	37.72%	38.31%	38.84%	39.38%	39.96%	41.50%	41.50%	40.36%		38.29%	36.59%	36.59%
MOI	37.05%	37.72%	38.31%	38.84%	39.38%	39.96%	41.50%	41.50%	40.36%		38.29%	36.59%	36.59%
MIN TEC	36.59%	36.59%	36.59%	36.59%	36.59%	36.59%	36.59%	36.59%	36.59%		36.59%	36.59%	36.59%
SANLORENZO													
MAX TEC	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%		100.00%	100.00%	100.00%
MOS	0.68%	1.67%	2.60%	3.38%	4.32%	5.45%	7.75%	7.75%	5.99%		2.68%	0.00%	0.00%
MOI	0.68%	1.67%	2.60%	3.38%	4.32%	5.45%	7.75%	7.75%	5.99%		2.68%	0.00%	0.00%
MIN TEC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%		0.00%	0.00%	0.00%
TRONERAS													
MAX TEC	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%		100.00%	100.00%	100.00%
MOS	16.79%	17.57%	18.38%	19.17%	20.04%	20.92%	22.72%	22.72%	21.25%		18.48%	16.23%	16.23%
MOI	16.79%	17.57%	18.38%	19.17%	20.04%	20.92%	22.72%	22.72%	21.25%		18.48%	16.23%	16.23%
MIN TEC	16.23%	16.23%	16.23%	16.23%	16.23%	16.23%	16.23%	16.23%	16.23%		16.23%	16.23%	16.23%
URRA1													
MAX TEC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%		0.00%	0.00%	0.00%
MOS	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%		0.00%	0.00%	0.00%
MOI	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%		0.00%	0.00%	0.00%
MIN TEC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%		0.00%	0.00%	0.00%