

ENVIRONMENT AGENCY

**CONTROLS ON EMISSIONS FROM
COAL- AND OIL-FIRED POWER STATIONS**

**THE AGENCY'S DECISION FOLLOWING
ITS 1999 PUBLIC CONSULTATION ON ITS
PROPOSED CONTROLS**

17 DECEMBER 1999

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SUMMARY

1. This document describes the main environmental controls, relating to emissions of sulphur dioxide (SO₂), oxides of nitrogen and particulates, that the Environment Agency intends to place on the running of coal- and oil-fired power stations in the electricity supply industry (ESI) in England and Wales. The controls are outlined in Annex 1.
2. The Agency's decision is made in accordance with its statutory powers and duties, in particular under the Environmental Protection Act 1990 (EPA 90) and the Environment Act 1995 (EA95). The decision follows a number of extensive consultation exercises over the last three years on proposals for new controls, developed against the background of rapid change in the structure of the ESI. The decision takes into account the results of those exercises and other relevant matters, including the comments on SO₂ emission limits made in 1998 by the House of Commons Trade and Industry Committee, and the new Government energy policy announced in October 1998.
3. The Agency will implement the changes by means of variation notices. A model variation notice is attached as Annex 2. The changes reflect the Agency's current assessment of what can reasonably be achieved for minimising releases of SO₂, oxides of nitrogen and particulates without excessive cost, an assessment which is expected to remain sound for the next four year review to be completed under EPA 90 by the end of March 2000.

BACKGROUND

4. The Agency's functions under EPA 90 cover the control of pollution from certain prescribed industrial processes. These include processes burning any fuel in a combustion appliance with a net rated thermal input of 50 megawatts or more, such as the coal- and oil-fired power stations within the ESI. Such processes require authorisations from the Agency, and the Agency must set conditions. The Agency's basic purpose when regulating in this connection is to prevent or minimise pollution of the environment due to the release of harmful substances, such as SO₂. Broadly speaking, under s.7 EPA 90, the conditions of authorisation set by the Agency have to include in particular such specific conditions as appear to be appropriate, given the Agency's basic statutory objectives, and also conditions which ensure that the best available techniques not entailing excessive cost will be used in running the process, for preventing and minimising releases, and rendering them harmless.
5. The ESI coal- and oil-fired power stations were first granted authorisations in 1993, by Her Majesty's Inspectorate of Pollution ("HMIP"), the Agency's predecessor in this area. In March 1996, shortly before the Agency assumed HMIP's functions, HMIP varied the conditions of authorisation, and set out revised controls. In 1997, the Agency embarked upon a process of

consultation relating to the changes made in 1996 and proposals made by the generating companies as to how they intended to comply with those changes. In the light of the submissions that the Agency received, and certain market developments since 1996, a round of consultation was held in early 1998 in respect of Agency proposals to tighten further the 1996 controls.

6. In the following period, the House of Commons Trade and Industry Committee investigated the prospects for the UK coal industry, and set out its views in its Coal Report of March 1998. In October 1998, the Government published its new energy policy in the White Paper entitled "Conclusions of the Review of Energy Sources for Power Generation". These were relevant to the issues being considered by the Agency.
7. The Agency, in the light of all the information that it had received, including representation from the industry and other consultees, issued new proposals to update the existing conditions of authorisation for the ESI generating plants, and carried out a further public consultation exercise relating to those proposals between March and May 1999. This document completes that 1999 consultation.

THE BASIC STRUCTURE OF THE CONTROLS ON SO₂ EMISSIONS

8. The Agency's essential regulatory task is to drive down levels of emissions of harmful releases as far as possible, while striking a balance with the need to ensure that excessive costs are not thereby placed upon the industry. The special features of this industry make it inappropriate to apply single inflexible emission limits to counter SO₂ releases from each generating plant subject to authorisation. First, the major generators are operators of differing portfolios of plant, in different parts of the country. The varying operational demands of the integrated grid system, and the fact that the generators run the plants in their respective portfolios as a functional unity, make necessary a degree of flexibility of operation. Second, SO₂ is a pollutant that has long range effects as well as being liable to cause local damage. In regulating the long range effects, minimising the totality of emissions from the ESI as a whole and from the different generating plants within operators' portfolios is relevant.
9. Accordingly, the Agency uses a dual system of controls on emissions from the generating plant, which are known as "A" limits and "B" limits. The A-limits are "ceilings", designed to protect the local environment from harm caused by releases from the process. The B-limits for each station are concerned with the effects of long range SO₂ pollution of the environment, including critical loads acidification effects. The sum of the B-limits applying to an operator's portfolio of plant is the limit of particular importance in relation to countering long range pollution. Operators are able to increase the B limit applying to a particular plant, provided that the relevant A-limit is not exceeded and the overall sum of the B-limits is not exceeded.

10. The variations to the existing conditions of authorisation which the Agency now intends to impose contain revised A- and B-limits. They are judged to strike the correct balance between the aim of minimising pollution and the need to avoid the imposition of excessive cost. In the case of the B-limits, the overall result of implementing the Agency's proposals will be a continued significant reduction in SO₂ emissions from the industry over time, falling to a maximum aggregate level of releases of 398Kte in the year ending 30 September 2005.
11. The new conditions will also allow operators controlled flexibility in their B-limit ceilings, if they construct and use flue gas desulphurisation plant ("FGD") with their processes. FGD is normally the most effective basic abatement technique where plant is run at a sufficiently high load factor. As its name suggests, it strips SO₂ from the flue gases produced by fossil fuel generating plant. The introduction of measures encouraging its wider use where practicable in relation to coal- and oil-fired plant will be a significant step forward in environmental regulation in this area.

THE A-LIMITS

12. In the 1999 consultation document, the Agency proposed to review the existing A-limits, in order to take account of developments in atmospheric dispersion modelling techniques and other matters, including indications that the remaining useful life of some stations might be greater than had originally been thought. Following from the 1996 variations, the Agency also proposed to require the generators jointly to develop an operational protocol to prevent or mitigate the effects of SO₂ emissions from their stations on local short-term air quality.
13. In the event, the Agency is satisfied that developing a protocol as planned is not yet practicable. Before and during the Agency's 1999 consultation, a trial to develop such a protocol was undertaken at three power stations. The results indicated that it is not yet possible accurately to predict periods of poor air quality, and that, given the frequency of occurrence of such periods, the application of such a protocol might have significant implications for the efficient operation of the national grid.
14. The Agency has nevertheless re-assessed the impact on the local environment of each station and group of stations, taking account of likely daily and seasonal generation patterns; weather conditions; and acidification effects, up to 2005. The revised A-limits are set out in Table 1 below. For the period 1 January 1998 to 30 September 2004, the A-limit values are equivalent to those put forward by HMIP in the 1996 variations. However, for the period 1 October 2004 to 30 September 2005, the A-limit values for some stations eg in the Thames Valley have been reduced whilst others, eg for Rugeley, have been increased. The changes result from an assessment both

of the maximum annual release which would enable the objectives of the National Air Quality Strategy to be met and of BATNEEC issues.

15. The Agency recognises that, given the characteristics of short term air pollution, annual limits alone are unlikely to provide adequate protection. On the other hand, maximum hourly limits would be impractical and also would be unlikely to deliver the required benefits. With these considerations in mind, the Agency intends to require each generator to devise a management and monitoring plan, to be cleared with the Agency by 30 September 2000, demonstrating how it proposes to meet the requirements of the National Air Quality Strategy.

Table 1

A-Limits (kte) for Coal- and Oil-Fired Power Stations

Station	Company	1.1.98- 1.12.98	1.1.99- 30.9.99	1.10.99- 30.9.00	1.10.00- 30.9.01	1.10.01- 30.9.02	1.10.02- 30.9.03	1.10.03- 30.9.04	1.10.04- 30.9.05
Aberthaw	National Power	90.0	67.5	90.0	76.7	72.3	72.3	72.3	39.0
Blyth	National Power	101.4	76.0	44.1	25.0	25.0	25.0	25.0	25.0
Didcot A	National Power	174.2	130.7	174.2	124.2	107.6	107.6	107.6	67.0
Eggborough	National Power	216.0	124.5	166.0	115.6	98.8	98.8	98.8	68.0
Fawley	National Power	30.0	22.5	30.0	30.0	30.0	30.0	30.0	9.0
Littlebrook	National Power	42.0	31.5	42.0	42.0	42.0	42.0	42.0	13.0
Tilbury	National Power	70.8	53.1	70.8	70.8	70.8	70.8	70.8	23.2
Cottam	PowerGen	226.0	115.4	153.9	113.7	100.3	100.3	100.3	61.0
Grain	PowerGen	56.4	42.3	56.4	56.4	56.4	56.4	56.4	25.0
Kingsnorth	PowerGen	114.0	85.5	114.0	114.0	114.0	114.0	114.0	68.5
Ratcliffe	PowerGen	65.0	48.7	65.0	65.0	65.0	65.0	65.0	50.0
Drakelow	Eastern	70.0	52.5	70.0	54.9	49.9	49.9	49.9	35.0
High Marnham	Eastern	51.0	38.2	51.0	48.1	47.2	47.2	47.2	25.0
Ironbridge	Eastern	105.1	70.9	94.6	56.3	43.6	43.6	43.6	34.3
Rugeley B	Eastern	111.0	74.9	99.9	57.9	43.9	43.9	43.9	34.3
West Burton	Eastern	240.0	101.9	135.9	106.4	106.4	106.4	96.5	30.0
Ferrybridge	Edison Mission Energy	208.0	112.9	150.6	111.0	97.9	97.9	97.9	55.9
Fiddler's Ferry	Edison Mission Energy	172.0	102.7	137.0	92.7	78.0	78.0	78.0	44.6
									Under review
									Under review
Drax	AES	100.0	75.0	40.0	40.0	40.0	40.0	40.0	40.0

THE B-LIMITS AND ASSOCIATED CONDITIONS

The requirement for operators to submit upgrading proposals for existing FGD plant

16. An improvement condition in the new variation notices (Annex 2) will provide for the operators to submit proposals to the Agency, prior to 1 October 2000, for the upgrading of all existing SO₂ abatement plants so as to achieve in particular improved efficiency of SO₂ removal.
17. The FGD plants at Drax and Ratcliffe are designed for 90% SO₂ removal efficiency. However, they do not presently come on-stream for practical reasons until the generating unit concerned is already effectively at half load. This reduces overall efficiency of SO₂ removal to around 80-85%.
18. By contrast, the efficiency of new FGD plants on new stations can be up to 95%, designed to start at zero load. Consequently, the Agency proposed in the 1999 consultation document that operators of existing FGD plants should submit a BATNEEC assessment to it on whether their plants should be upgraded.
19. The new condition will not require upgrading to take place, come what may. It will provide only for a proper assessment of the case to be presented for review. The Agency is satisfied that the condition is appropriate.

Encouraging the construction of FGD

20. The Agency intends to encourage operators to construct new FGD plants, by allowing coal-fired generators building a new FGD plant in England and Wales an increase in their B-limits of perhaps 45 kte per annum per gigawatt of FGD during the two years in which the FGD plant is under construction. The Agency also plans to allow operators to exceed their overall B limits by an amount not greater than 37.5kte per annum per gigawatt of FGD whilst the FGD plant is under construction (Annex 2).
21. Eastern Generation, anticipating that the Agency would seek to encourage such FGD construction, had already indicated, prior to the 1999 consultation document being published, that it would install 2GW FGD at West Burton power station. Edison Mission Energy said in its response to the 1999 consultation that its bid to acquire the Fiddler's Ferry and Ferrybridge stations from PowerGen assumed such allowances would be available. Edison indicated that, should the Secretary of State approve its bid and assuming the allowances were available, it would install 1.5GW of FGD between the two stations. The 3.5GW of new FGD plant across the two companies' proposals would increase FGD capacity in England and Wales by about 58%. Since the 1999 consultation ended, British Energy has agreed to buy Eggborough

station from National Power, and is in discussion with the Agency on fitting FGD there.

22. The Agency is satisfied that its proposals provide the necessary encouragement for new FGD plants to be built, and will lead to significant environmental benefits. Whilst there will be some additional detriment to the environment in the short term resulting from the grant of these allowances, critical loads studies undertaken by the Agency in support of the 1999 consultation document indicate that the effects are likely to be fairly small, and strongly outweighed by the longer term environmental benefits of introducing the new FGD capacity.
23. Further, the Agency intends to require any generating units on stations expected to be operated at above 40% load factor after 30 September 2001 to be subject to a BATNEEC assessment no later than 1 April 2000 to allow a decision to be made on whether it is practicable to fit FGD (Annex 2).
24. The reason for the trigger level of 40% load factor is that the available evidence suggests that, for operations below this level, the costs per tonne of SO₂ abated increase markedly. There is a strong case that it is normally uneconomic to fit FGD on plant operating at load factors below this level.
25. Thirdly, the Agency intends to require operators to submit written statements on the expected life and capacity of their generating stations no later than 1 October 2000, and to update such statements regularly (Annex 2). The expected remaining economic life of a process is a factor for the Agency to consider in any assessment of whether obligations to introduce new pollution abatement techniques are excessively costly. It will not normally be appropriate to require the fitting of expensive new abatement equipment, if the remaining economic life is likely to be short. However, in this industry it appears to be possible for operators to extend the remaining life of processes beyond original estimates of their lifespan. The Agency therefore intends to put in place the reporting mechanism contained in the improvement condition (Annex 2) to enable it from time to time to review the position in relation to the lifespan of particular plants.

The structure of the new operator B-limits

26. The new operator B-limits are summarised in Table 2 below. In arriving at these limits, the Agency has taken into account the broad patterns of generation of the different operators, and the need to minimise the overall impact of SO₂ emissions across the industry whilst not unduly constraining the ability of operators to win market share from each other. The Agency believes it is inappropriate, for the future, to rely too much on total generating capacity as the basis for determining emission limits, particularly as some new entrants to the market do not have FGD-fitted stations. Rather, the need is to pay

regard to the relative level of emissions which might be produced by each company, particularly in later years as the overall industry B-limit decreases.

TABLE 2

Proposed B-Limit Allocations (Kte) After Transfer Of Fiddler's Ferry And Ferrybridge Power Stations To Edison Mission Energy, and of Drax Power Station to the AES Corporation

	1.1.98- 31.12.98	1.1.99- 30.9.99	1.10.99- 30.9.00	1.10.00- 30.9.01	1.10.01- 30.9.02	1.10.02- 30.9.03	1.10.03- 30.9.04	1.10.04- 30.9.05
National Power	[563]	[290]	259.0	209.0	109.0	109.0	109.0	98.0
PowerGen	[530]	[240]	164.6	134.6	95.2	95.2	95.2	89.2
Eastern Merchant Generation	[407]	[250]	309.0	299.0	199.0	199.0	106.0	99.0
Edison Mission Energy	[-]	[-]	143.9	113.9	74.3	74.3	74.3	68.3
AES Corporation	[-]	[-]	43.5	43.5	43.5	43.5	43.5	43.5
TOTAL	[1500]	[780]	920.0	800.0	521.0	521.0	428.0	398.0

The switch to a 1 October reporting cycle

27. It is the Agency's intention to switch to a 1 October-based cycle for reporting emission control data to the Agency, because this offers advantages in managing emissions over the winter period. One consultee pointed out that the change might make the data less immediately comparable with previous data collected on a calendar year basis, a problem that the Agency will address when affecting the change.

Limits on SO₂ releases per unit of electricity generated

28. The Agency intends to introduce annual average limits on releases of SO₂ from each process per unit of electricity generated (Annex 2). The aim is to ensure that, as one generator gains generation and emits more SO₂, so other generators, losing generation, will emit less SO₂, thus producing a broadly neutral outcome for the environment. The controls will be uniform across the industry.
29. It was suggested by another consultee that, of the permissible rates of SO₂ release proposed in the consultation document, those for FGD-fitted stations (2.7te/GWh in 2000-2001 declining to 2.4te/GWh in 2004-2005) were too high. To clarify, however, the Agency envisages that generators, in order to comply with their B limits and the limits on release rates from non FGD stations, will want to use higher sulphur coals at the FGD-fitted stations, and lower sulphur

coals at the non FGD stations. The Agency's proposals support and encourage such strategies. Actual releases will depend on the sulphur content of the coal burned and the load factor on individual stations, existing stations potentially having higher rates of SO₂ release at low overall unit load factors. The Agency will ensure that in addition to the SO₂ rate limits set, any FGD-fitted station operates in a manner which ensures appropriately high SO₂ removal rates.

Generators using their FGD-fitted stations more intensively

30. The Agency intends to apply a condition to encourage the more intensive use of FGD. Accordingly, where an operator takes all practicable steps to ensure that the average operating load factor of its FGD units is at least twice the factor for its unabated units during the relevant period, the operator's B limit may be exceeded by not more than 30kte per annum per gigawatt of FGD (Annex 2).
31. This condition is likely to produce substantial environmental benefits by encouraging the increased use of FGD when operators might otherwise choose to run lower cost dirtier plant, and the Agency is satisfied that it is appropriate.

The requirement for operators to justify the use of coal as fuel in any unabated unit after 30 September 2001 if the sulphur content exceeds 1.2 per cent.

32. The Agency will require operators to justify the use of coal as fuel in any unabated unit after 30 September 2001 if the sulphur content exceeds 1.2% (Annex 2).
33. The requirement is related to the possibility of coal carouselling between stations in order to manage coal sulphur content, a possibility canvassed in the consultation exercises. The evidence available to the Agency suggests that using available reserves of low sulphur coal in unabated stations, and burning high sulphur fuels in stations fitted with abatement equipment, would yield considerable environmental benefits.
34. This evidence also indicates that the additional transportation costs to operators could be justified in relation to the environmental benefits obtained. The Agency's condition will therefore require operators to supply a reasoned assessment wherever they propose to burn coal with a sulphur content higher than 1.2% in unabated stations after October 2001.
35. A number of consultees objected to this proposal on the grounds that it would be difficult for UK coal producers to meet the target. However, the Agency's review of coal quality within the UK shows that, compared to the projected demand for coal-fired electricity, considerable coal is likely to be available with

an average sulphur content of 1.2% or less. It appears to the Agency that such reserves may play an increasing role in meeting SO₂ emission limits in the coming years.

OXIDES OF NITROGEN (NO_x)

36. The Agency's review of the controls on NO_x emissions, mentioned in the 1999 consultation document, continues. The cost of various techniques for upgrading the abatement equipment fitted to large coal- and oil-fired power stations, and the potential reductions in emissions that would result, have already been evaluated. The Agency plans to complete the review by 31 March 2000, and subsequently to issue appropriate variation notices.

PARTICULATES

37. Following on from the 1999 consultation document, the Agency has considered the generators' proposals for control of particulates against its requirements for generating units not fitted with FGD, in order to deliver a monthly-average emission limit of 50mg/m³. It has concluded that this limit is BATNEEC for all power stations except that at Isle of Grain. All stations except Isle of Grain will be expected to meet the limit in 2001, at precise dates to be agreed individually with the Agency for each station. Stations which come to have FGD fitted will be expected to meet a similar requirement, perhaps at later dates. Taking into account start-up and shut-down considerations, the Agency has set out a common reporting and monitoring system.
38. A low load factor is expected at Isle of Grain, and consequently PowerGen has presented a case that special considerations should apply. The Agency is considering this case, and will ensure that particulates control at Isle of Grain conforms with BATNEEC requirements.

OTHER ISSUES ARISING FROM THE 1999 CONSULTATION DOCUMENT

39. Some consultees feared that the SO₂ limits proposed would have a significant adverse effect on the UK coal industry and would lead to job losses in mines and support industries; that socio-economic impacts would be severe, particularly in rural mining communities; and that coal imports would increase.
40. The Agency's duty in regulating the ESI is to prevent, reduce and minimise pollution of the environment. However, the Agency also has to have regard to matters such as the effect of its proposals on the economic and social wellbeing of local communities in rural areas. The Agency has carefully considered the representations which have been made to it on such issues and believes that its present proposals are consistent with the discharge of all of its statutory obligations.

41. Several consultees pointed out that the Agency's limits would exceed those required by international treaty (for example, the second UNECE Protocol). The Agency is however required to discharge its duties under the relevant UK legislation, namely EPA 90 and EA 95. The obligation to fulfil the second UNECE Protocol rests with the Government and is addressed in its strategy for reducing national emissions of SO₂. The strategy confirms that the UK regulatory regime is important in meeting the obligations of the Protocol, and that the Agency must continue to apply that regime to its regulation of the ESI.
42. Some of the generators and the UK Petroleum Industry Association (UKPIA) recalled that EU Directive 1999/32/EC, the "Sulphur in Liquid Fuels Directive", requires all fuel oil to have a maximum sulphur content of 1% from 1 January 2003, unless burned in a plant that meets the requirements of the Large Combustion Plant Directive by being equipped with FGD. They believed that the proposal in the 1999 consultation document that oil-fired stations should be subject to a maximum sulphur content of 1% from 1 October 2000 should be deleted, in particular because it would restrict the possibility of burning high sulphur fuel oil in FGD-fitted plants, which will continue to be allowed under EU Directives, and because it would be excessively burdensome, given that Directive 199/32/EC will implement the ban 27 months later in any event.
43. The Agency accepts that the practical difference is small in terms of SO₂ effects on the environment between the deadlines of 1 October 2000 and 1 January 2003. Accordingly, the Agency has decided instead to require plans from all coal- and oil-fired power stations detailing now the sulphur in oil will be reduced from existing levels to the Directive requirements by 1.1.2003.
44. One consultee observed that FGD increases carbon dioxide (CO₂) emissions per unit of coal-fired generation. The Agency believes that in the short term the benefits to the environment of the decrease in SO₂ emissions arising from the use of FGD would outweigh the effects of increased CO₂ emissions. However, for the longer term, the Agency acknowledges the need to minimise releases of CO₂, and has this objective firmly in mind.

OTHER LEGAL REQUIREMENTS

Large Combustion Plant Directive

45. The Government, in its strategy document "Reducing National Emissions of Sulphur Dioxide" (December, 1996), amended the National Plan which implements the LCPD in the UK by removing the sectoral and geographical constraints, whilst relying on a series of aggregate annual national emission targets for SO₂ and NO_x to deliver the requirements of the Directive. Therefore the National Plan itself no longer places any additional requirements on individual plants beyond those of the EPA 90 regime.

Conservation (Natural Habitats etc.) Regulations, 1994

46. The Regulations implement the EU Directives, 92/43/EC on the conservation of natural habitats and wild flora and fauna (the Habitats Directive), and 79/409/EC on the conservation of wild birds (the Birds Directive), and essentially require the Agency to satisfy itself that the integrity of designated wildlife habitat sites will not be adversely affected by licensed activities. The Agency is currently reviewing all existing licences, including those relating to coal- and oil-fired power stations, relevant to these sites in accordance with a procedure* agreed with English Nature and the Countryside Commission for Wales. It is anticipated that the review will be complete by March 2004.
- *EU Directives on the Conservation of Habitats and Wild Birds Directive, Council Directives 92/43/EEC and 79/409/EEC. Guidance for the Review of Environment Agency Permissions: Determining Relevant Permissions and 'Significant Effect'. Agency Reference EAS/3100/3/1.*

Environment Act, 1995

47. The 1995 Act, which created the Agency, also imposes various duties upon it which may bear on the regulatory decisions it makes. For example, the duty to have regard to sustainable development in accordance with the statutory guidance issued to the Agency by the Government, and to have regard to a range of conservation issues (s.7 of the Act). The Agency has carefully considered these various matters and is satisfied that the variation notices it now proposes to issue are fully in accordance with its duties and that no additional or different conditions are required at this time.

Groundwater Regulations, 1999

48. Regulations prohibit EPA 90 authorisations from permitting the direct discharge of a List I substance*. If authorisations allow the indirect discharge of List I substances or the direct or indirect discharge of List II substances*, then various requirements detailed in the Regulations must be met. The Agency will require generators to review their processes against forthcoming best practice guidance, and, if appropriate, to come forward with an improvement programme.

* *As defined in the Regulations*

ANNEX 1

THE AGENCY'S MAIN ENVIRONMENTAL CONTROLS FOR SULPHUR DIOXIDE, OXIDES OF NITROGEN AND PARTICULATES

1. Sulphur Dioxide

A-limits

1. Revised A-limits are set out in Table 1 of this Decision Document.
2. Each generator will be required to devise a management and monitoring plan, for clearance with the Agency by 30 September 2000, designed to ensure delivery of these limits.

B-limits

The Agency will:

1. Adopt the B-limits set out in the 1999 consultation document, after modification as in Table 2 of this Decision Document, to take account of the sale of Fiddler's Ferry and Ferrybridge power stations to Edison Mission Energy, and the sale of Drax power station to the AES Corporation;
2. Operate B-limit flexibility allowances, whilst keeping the system under review as experience with it develops;
3. Use the SO₂ emission rate controls set out in Tables 3 and 4 of the 1999 consultation document, in tandem with the B-limits, to ensure continuing environmentally acceptable operation whilst allowing B-limit flexibility;
4. Allow controlled flexibility in B-limits in the last two years of construction to companies constructing FGD plants;
5. Require individual generators to run their FGD-fitted stations more intensively than their non-FGD stations, and will allow controlled flexibility in B-limits to those who achieve a load factor on their FGD stations double that on their non FGD stations;
6. Require generators to submit an assessment to it of the case for the upgrading of existing FGD plants;
7. Require generators to submit an assessment to it of the case for fitting FGD to existing units which are expected to operate above 40% load factor beyond October 2001;
8. Put in place a reporting mechanism to enable it from time to time to review the position in relation to the lifespan of particular plants;

9. Switch to a 1 October-based cycle for reporting emission control data to it;
10. Proceed with the proposals for dealing with power station divestment which were set out in the 1999 consultation document; and
11. Proceed with the proposals for dealing with FGD plant breakdown which were set out in the 1999 consultation document.

Additional

The Agency will place an upper limit of 1% on sulphur in heavy fuel oil, to be met by 1 January 2003.

2. Oxides of Nitrogen

The Agency plans to complete its review by 31 March 2000, and to issue appropriate variation notices.

3. Particulates

1. All stations except that at Isle of Grain will be expected to meet a monthly-average emission limit of 50mg/m³ in 2001, at precise dates to be agreed individually with the Agency for each station. Stations which come to have FGD fitted will be expected to meet a similar requirement, perhaps at later dates;
2. A low load factor is expected at Isle of Grain, and consequently PowerGen has asked for special considerations to apply. The Agency is considering this case; and
3. Taking into account start-up and shut-down considerations, the Agency has set out a common reporting and monitoring system for all stations.

ANNEX 2

MODEL VARIATION NOTICE

ENVIRONMENTAL PROTECTION ACT 1990

**Variation Notice
and
Introductory Note**

COMPANY

ADDRESS

Variation Notice Number XXXX

Authorisation Number XXXX

INTRODUCTORY NOTE

- IN 1. This Note does not form part of the Variation Notice.
- IN 2. The following Notice is issued under section 10(3A) of the Environmental Protection Act 1990 ("the 1990 Act") to vary the conditions of an Authorisation issued under the 1990 Act to operate a combustion process. The Notice comprises Schedule A containing conditions to be deleted, Schedule B conditions to be amended and Schedule C conditions to be added.

The Notice is subject to the express conditions set out in Schedules A to C. Aspects of the process not regulated by those conditions are subject to a general condition implied by section 7(4) of the 1990 Act that the person carrying it on must use the best available techniques not entailing excessive costs:-

(a) for preventing the release of substances prescribed for any environmental medium into that medium or, where that is not practicable by such means, for reducing the release of such substances to a minimum and for rendering harmless any such substances which are so released; and

(b) for rendering harmless any other substances which might cause harm if released into any environmental medium.

Techniques include (in addition to technical means and technology) the number, qualifications, training and supervision of persons employed in the process and the design, construction, lay-out and maintenance of the buildings in which the process is carried on.

IN 3. Description of Process

IN 3.1 Process Description

IN 3.2 Changes made by this Variation Notice

The following Notice has been issued to implement the Agency's decision made in light of the responses to the various public consultations it has run since 1997, most recently that from 23 March to 21 May 1999; the comments on SO₂ emission limits made by the House of Commons Trade and Industry Committee in its Coal Report of March 1998; and the new Government energy policy announced in October 1998.

For SO₂ emissions, the Notice continues to apply "A" limits to counter the effects of individual stations on their local environments, and "B" limits to control the impact of groups of stations on the wider environment. The Agency has reviewed the existing A-limits, in order to take account of developments, for example, in atmospheric dispersion modelling, since the limits were first established. In 1996 it required the electricity generators jointly to develop an operational protocol to prevent or mitigate the impacts of SO₂ emissions from their stations on local, short-term air quality. In the event, it has been shown that it is not yet possible accurately to predict the onset or magnitude of local, short-term air quality problems, and consequently the Agency has combined the review of A-limits with the work on the protocol. The Notice sets out

A-limits revised on this basis. It requires the National Air Quality Strategy objectives to be met by the station by 2005 and a Management Plan, including environmental monitoring, to be developed to ensure it is still met even when considering other sources of pollutant. The Notice has re-designed the B-limits in order to encourage further construction of new flue gas desulphurisation (FGD) plants and higher utilisation of existing FGD plants, whilst facilitating market competition in electricity sales between generators which operate coal-fired power stations. The B limits:

1. Take account of the sale of Fiddler's Ferry and Ferrybridge power stations to Edison Mission Energy, and the sale of Drax power station to AES;
2. Operate a flexibility allowance system to take account of the potential for generators to gain market share from each other whilst limiting the scale of the allowances over the long-term to ensure broad environmental neutrality;
3. Use SO₂ emission rate controls, in tandem with the B-limits, in order to ensure continuing environmentally acceptable operation whilst allowing B-limit flexibility;
4. Allow controlled adjustments in the B-limits in the last two years of construction to companies constructing FGD plants;
5. Require individual generators to run their FGD power stations ahead of their non-FGD stations, and to allow controlled flexibility in B-limits to those who achieve a load factor on their FGD stations double that on their non FGD stations. If the operator applies for authorisation to build further FGD on any of their stations the Agency will consider increasing the B limit by an allowance of perhaps 45kte SO₂ per GW of FGD for two years.

The Notice also requires:

1. An upper limit of 1% on sulphur in fuel oil burnt in the boilers by 1/1/2003.
2. An emission limit on particulate of 50mg/m³ along with a common reporting and monitoring system.

[Grain + units potentially being fitted with FGD - miss out as case still being considered.]
3. Switch to an annual reporting cycle commencing 1 October each year for reporting emission control data to the Environment Agency.
4. Specific Conditions relating to FGD plant breakdown on any FGD plant in the portfolio.
5. The operator to submit improved sampling and monitoring related protocols.
6. [The operator to submit an assessment to the Agency of the case to upgrade existing FGD plants.] FGD plant

6. [The operator to submit an assessment to the Agency of the case for fitting FGD to existing plants which are expected to operate above 40% load factor beyond October 2001.] Non-FGD plant
7. [The operator to submit a case if they wish to burn coal greater than 1.2% without FGD beyond September 2001.] Non-FGD plant

It is proposed that new controls on oxides of nitrogen will be contained in further Variation Notices to be issued in 2000.

This Notice has also consolidated previous variations by the re-issue of the entire authorisation document.

IN 4. Status Log

Description	Ref Number	Issued	Effective Date	Type of changes made or comments
Authorisation				
Minor variation	Section 10(3A)	19/1/00	1/2/00	Implementation of Agency's decision resulting from consultation in 1999.

[Table to start with Authorisation number, include all variations ending with this one.]

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ENVIRONMENT AGENCY
ENVIRONMENTAL PROTECTION ACT 1990

VARIATION NOTICE

COMPANY NAME

Authorisation Number

Variation Notice Number XXXX

The Environment Agency in exercise of its powers under Section 10(3A) of the Environmental Protection Act 1990 ("the 1990 Act") hereby varies the Variation, Number [] which varied the Authorisation, Number [], as varied by other Variations, held by,

("the Operator")

whose Registered Office is

which relates to the Authorised Process carried on at the premises occupied by the Operator at
subject to the conditions in this Notice.

This Notice shall have effect from 1 February 2000.

Signed
- Authorised to sign on behalf of the Environment Agency

Dated the

SCHEDULE A

CONDITIONS TO BE DELETED

All Conditions contained within Parts 1 to 9 and all attached Schedules of Authorisation [Number] and as amended by all subsequent Variation Notices shall be deleted.

SCHEDULE B

CONDITIONS TO BE AMENDED

None

SCHEDULE C

CONDITIONS TO BE ADDED

All Conditions contained in the attached Parts 1 to 9 and Schedules 1 and 2

PART 1

OPERATION OF PROCESS

- 1.1 The Authorised Process shall, subject to the provisions of this Authorisation, be carried on using the techniques and in the manner described in the Application.
- 1.2 The Operator shall maintain in good operating condition all plant, equipment and technical means used in carrying on the Authorised Process.
- 1.3 The Authorised Process shall be managed and operated by sufficient persons who are suitably qualified, experienced, trained and supervised in respect of the duties to be undertaken in connection with the carrying on of the process.
- 1.4 The Operator shall provide the persons mentioned in condition 1.3 with appropriate written operating instructions for their duties in relation to the carrying on of the Authorised Process.
- 1.5 Any person having duties which are or may be affected by the matters set out in the Authorisation shall have convenient access to a copy of this document kept at or near to the place where he carries out those duties.
- 1.6 Unless otherwise specified in Schedule 2 of this Authorisation, safe and permanent means of access shall be provided to enable sampling and monitoring to be carried out in relation to the release points specified in that Schedule. A safe means of access shall be provided to other sampling and monitoring points when required by the Environment Agency.
- 1.7 The Operator shall, subject to the provisions of this Authorisation, take such samples and carry out such analyses, calibrations, examinations, measurements, tests and surveys as specified in the Application, at the frequency and in the manner so specified.
 - 1.7.1 [Site specific Conditions]
- 1.8 Subject to the provisions of this Authorisation, any assessment of analytical or monitoring results in relation to compliance with specified limits or operational parameters shall have regard to any provisions in the Application relevant to that assessment.

RECORDS

- 1.9 The Operator shall make a record of all samples, analyses, calibrations, examinations, measurements, tests and surveys taken or carried out as required by condition 1.7 ("specified records") and of any assessment made in accordance with condition 1.8.

1.10 The Operator shall make available for inspection by the Environment Agency at any reasonable time -

(a) specified records;

(b) any other operational records made by the Operator in the course of carrying on the process ("operational records").

1.11 Specified records and Operational records shall:-

(a) be legible;

(b) be made as soon as reasonably practicable;

(c) if amended, be amended in such a way as to permit, where practicable, retrieval of the original record;

(d) be retained, in the case of specified records for a period of four years from the date when the records were made and in the case of operational records for a period of one year from the date when the records were made.

NOTIFICATIONS

1.12 The Operator shall notify the Environment Agency:-

(a) of the detection of the release of any substance which exceeds any relevant limit or criteria specified in relation to the substance in this Authorisation;

(b) of the detection of the release of any other substance which might cause harm except in a quantity so trivial that it would be incapable of causing harm or its capacity to cause harm is insignificant;

(c) of any malfunction or breakdown of plant, equipment, technical means or technology if the malfunction or breakdown has potential to cause serious pollution of the environment.

1.13 Notification under condition 1.12 shall be made *without delay* to the Reporting Address. In the case of a release mentioned in condition 1.12 (a) or (b) the Operator shall within 24 hours of such notification, send to the Reporting Address in writing the information set out in Part A of Schedule 1 and, as soon as practicable thereafter, the information set out in Part B of that Schedule.

1.14 If a release mentioned in condition 1.12 (a) or (b) is into controlled waters the Operator shall, *without delay, also* inform the Environment Agency of the release via its Emergency Hotline telephone number.

PART 2

RELEASES INTO AIR

2.1 General Conditions

2.1.1 A release from the Authorised Process into the air from a release point specified in Table 2.1 shall arise only from the source for that release specified in that Table.

Release Point Number	Source
Main Boiler Stack	Boilers 1-x inclusive
Gas Turbine Stacks	Gas Turbines

2.1.2 Only coal or oil (not including emulsified bitumen) alone, or in combination, shall be burned in the Authorised Process in accordance with the Application.

2.1.3 Coal supplied to the Operator's Premises for use in the Authorised Process shall be sampled in accordance with BS 1017:Part 1:1989 as frequently as necessary to obtain a representative sample of coal and each sample shall be analysed for sulphur content in accordance with BS 1016:Part 106:1996 or other such method as agreed by the Environment Agency .

2.1.4 Oil supplied to the Operator's Premises for use in the Authorised Process shall be sampled as frequently as necessary to obtain a representative sample of oil and each sample shall be analysed for sulphur content in accordance with BS 2000: Part 61:1993 or other such method as agreed by the Environment Agency.

2.1.5 The sulphur content of fuel fed to the boilers 1 to [x] and gas turbines of the Authorised Process shall not exceed the limits in Table 2.2A up to 1/1/2003 and Table 2.2B from 1/1/2003.

Fuel	Maximum Sulphur Content %W/W	
	Boilers 1-[x] (a)	Gas turbines (a)
Coal	[4.0 (Site specific as now but always to the boiler)]	Not applicable
Oil	3.5	0.2

(a) Any sample taken and analysed in accordance with appropriate British Standards when considered together with a Sampling and Estimation Protocol to be agreed in writing with the Agency shall not exceed this limit.

[Note Any existing RFO site specific Conditions to go in here]

TABLE 2.2B		
Fuel	Maximum Sulphur Content %W/W	
	Boilers 1-x (a)	Gas turbines (a)
Coal	4.0 [site specific]	Not applicable
Oil	1.0	0.2

(a) Any sample taken and analysed in accordance with appropriate British Standards when considered together with a Sampling and Estimation Protocol to be agreed in writing with the Agency shall not exceed this limit.

2.1.6 The mass of each fuel burned in the Authorised Process each Reporting Period shall be determined.

2.1.7 Releases to air from the handling or storage of coal or ash shall be minimised.

2.1.8 The release of droplets and acid soots from any chimney shall be minimised.

2.1.9 The Authorised Process shall be controlled so as to minimise offensive odours detectable outside the Operator's Premises.

2.1.10 From 1 January 2005 the Authorised Process shall be operated in such a way that its releases alone do not result in the exceedance of the objectives set out in the National Air Quality Strategy consultation document dated August 1999 for sulphur dioxide, oxides of nitrogen and particles (PM10).

2.2 Releases of Particulates

[Existing Conditions until 1 April 2001 [Example Date] then the tighter of these or the below]

[Non FGD]

2.2.1 A release from the Authorised Process into the air from a release point specified in Table 2.1 shall not exceed the limit for that release point in relation to any parameter specified in Table 2.3.

Table 2.3 Particulate Release Limits (a)				
Continuous Monitors (b)				Extractive sample (mg/m³) (c)
	Reporting period average (mg/m³)	24 hour average (mg/m³) (d)	1 hour average (mg/m³)	
Unit limit	50	80	120	50
Station limit (e)	50	70	100	-
Compliance basis (f)	100%	97 th percentile	97 th percentile	-

- (a) Monitoring procedure, definition, treatment of data and interpretations agreed by the Environment Agency in accordance with Improvement Programme Condition 8.5 shall apply.
- (b) The continuous limits on particulate matter apply to releases from each boiler measured in the ductwork at representative sampling point(s) downstream of the electrostatic precipitators. Monitor readings for periods of boiler operation below 75% minimum stable generation and monitor maintenance are excluded. An amendment for measurement uncertainty shall be applied, before comparing the continuous monitor averages with the limit values, by subtracting an appropriate confidence interval (agreed by the Environment Agency) from the measured values.
- (c) Extractive sampling shall be carried out in accordance with the most appropriate British Standard method (currently BS 3405:1983); these tests shall be performed on each unit at least once per year. The sampling duration shall be such that the minimum sample collection requirements of the British Standard are attained. Measurement shall be taken when the boiler is operating at a minimum of 90% of its maximum continuous rating
- (d) The interpretation of valid averaging periods will be defined in the output referred to in (a) above.
- (e) Station limits apply when two or more units are operating above 75% minimum stable generation.
- (f) After the first year of operation of these limits, percentile compliance shall be determined on the basis of a rolling 12 month period related to the averaging increment.

[FGD]

2.2.1 A release from the Authorised Process into the air from a release point specified in Table 2.1 shall not exceed the limit for that release point in relation to any parameter specified in Table 2.3.

Table 2.3 Particulate Release Limits (a)				
Continuous Monitors (b)				Extractive sample (mg/m³) (c)
	Reporting period average (mg/m³)	24 hour average (mg/m³) (d)	1 hour average (mg/m³)	
Abated Unit limit (f)	25	-	25 [West Burton specific]	25
Non-Abated Unit limit (g)	50 [West Burton specific]	80	120	50
Compliance basis (e)	100%	97 th percentile	97 th percentile	-

(a) Monitoring procedure, definition, treatment of data and interpretations agreed by the Environment Agency in accordance with Improvement Programme Condition 8.5 shall apply.

(b) The continuous limits on particulate matter apply to releases from each boiler measured in the ductwork at representative sampling point(s) downstream of the FGD unit. Monitor readings for periods of boiler operation below 100% minimum stable generation and monitor maintenance are excluded for Abated Units. Monitor readings for periods of boiler operation below 75% minimum stable generation and monitor maintenance are excluded for Non-Abated Units. An amendment for measurement uncertainty shall be applied, before comparing the continuous monitor averages with the limit values, by subtracting an appropriate confidence interval (agreed by the Environment Agency) from the measured values.

(c) Extractive sampling shall be carried out in accordance with the most appropriate British Standard method (currently BS 3405:1983); these tests shall be performed on each unit at least once per year. The sampling duration shall be such that the minimum sample collection requirements of the British Standard are attained. Measurement shall be taken when the boiler is operating at a minimum of 90% of its maximum continuous rating. The extractive sample limits on particulate matter apply to releases from each boiler measured in the ductwork at representative sampling point(s) downstream of the FGD unit.

(d) The interpretation of valid averaging periods will be defined in the output referred to in (a) above.

(e) After the first year of operation of these limits, percentile compliance shall be determined on the basis of a rolling 12 month period related to the averaging increment.

(f) With the exception of periods of operation without FGD as defined in 2.3.7(a)(i), (ii) and (iii), where the non-abated limits shall apply.

(g) This includes abated units which are "temporarily non-abated" as defined in conditions 2.3.8 to 2.3.10 and abated units which are operating without FGD as defined in 2.3.7 (a) (i)(ii), and (iii)

2.3 SO₂ Operating Conditions

2.3.1. The operator shall ensure that:-

(a) for each Assessment Year the average release of sulphur dioxide from the Authorised Process per GWh does not exceed such amount as shall be notified by the Operator to the Agency from time to time, such amount not to exceed the relevant figure for Abated or Non-Abated Units (as the case may be) in Table 2.4 by more than 20%, unless with the agreement of the Agency.

(b) The amount mentioned in 2.3.1(a) above (together with the amounts notified to the Agency in respect of other Relevant Processes for the Assessment Year in question) shall not exceed the average release of SO₂ per GWh for all Abated or Non-Abated Units (as the case may be) which is stipulated for the Assessment Year in question in Table 2.4.

(c) In the case of a Process which contains both Abated and Non-Abated Units in any Assessment Year conditions 2.3.1(a) and 2.3.1(b) above shall apply on the basis of an appropriate pro-rating of the relevant figures in Table 2.4, subject to prior approval by the Agency of the basis of the calculation.

(d) In any Assessment Year the operating load factor of any Abated Units in the Authorised Process when averaged with the operating load factors of all other Abated Units in the Relevant Processes shall not be less than the average of the operating load factors of all Non-Abated Units in the Relevant Processes.

Table 2.4						
Average tonnes SO ₂ /GWh to be met by Abated or Non-Abated Units (as the case may be) across all Relevant Processes						
	Assessment Year (1/10 to 30/9) (a)					
	1999- 2000	2000- 2001	2001- 2002	2002- 2003	2003- 2004	2004- 2005
	[FIGURES ONLY TO BE PLACED IN A STATION'S AUTHORISATION WHERE THERE IS ONE OR MORE FGD UNIT]					
Abated Units (c)	2.7	2.7	2.7	2.5	2.4	2.4
Non-Abated Units	14.0	14.0	14.0	X (b)	X (b)	X (b)

a) The value of the tonnes SO₂/GWh is given by the following equation, applied to Non-abated and Abated Units (as the case may be).

$$t.SO_2/GWh = Tot_t/G_e$$

Where: Tot_t is the total mass of SO₂ released from all Abated or Non-Abated Units (as the case may be) over an Assessment Year.

G_e is the total generation arising from the use of coal and any oil used as main fuel, or in start up or support mode from all Abated or Non-Abated Units (as the case may be) expressed as GWh over an Assessment Year sent out from the power station.

In the absence of an agreed protocol based on the continuous measurement of sulphur dioxide or other method agreed in writing with the Agency, the release of sulphur dioxide shall be calculated in accordance with the formula.

Sulphur dioxide released (Tots)(tonnes) = $[(S_c \times T_c \times 0.95) + (S_o \times T_o) + (S_g \times T_g)] \times 0.02$ where:

S_c	=	sulphur content of coal (% w/w);
S_o	=	sulphur content of oil (% w/w);
S_g	=	sulphur content of gas (%w/w);
T_c	=	coal burned (tonnes);
T_o	=	oil burned (tonnes);
T_g	=	gas burned (tonnes).

[This means all FGD and partial FGD fitted stations will need an agreed protocol but above footnote will stay after agreement to allow easy local reagreement if necessary without formal variation.]

- b) X to be notified by the Agency one year in advance of start of the year.

[FGD]

- c) Limit for Abated Units is given by the curve in [enter document names] and any subsequent amendment agreed in writing with the Environment Agency. [For West Burton and subsequently others on receipt of IP report. The figures in the table should be left out once the curve is finalised]

[NON FGD]

- d) Limit for Abated Units has only been placed in those relevant processes with Abated Units.

SO₂ Release Limits

2.3.2 Subject to conditions 2.3.4 to 2.3.12 the aggregated mass release of sulphur dioxide from release points specified in Table 2.1 shall not exceed the lower of:

- (a) the limit for the year in question specified in column (2) of Table 2.5 (the "Process A-limit"); or
- (b) subject to condition 2.3.3 below, such lower annual amount as may be notified to the Agency at the Central Reporting Address by the Operator from time to time (the "Process B-limit").

2.3.3 Except as provided in conditions 2.3.5 and 2.3.6 and 2.3.11 and 2.3.12 below, the lower amount mentioned in 2.3.2(b) above together with the Process B-Limits notified to the Agency in respect of other Relevant Processes shall at no time exceed the limit for the Assessment Year in question specified in column (3) of Table 2.5 (the "Operator B-limit").

Table 2.5 A- and B- Limits		
1	2	3
Assessment Period	Process "A" Limit (tonnes SO ₂)	Operator "B" Limit (kilotonnes SO ₂)
1/10/99 – 30/9/00		
1/10/00 – 30/9/01		
1/10/01 – 30/9/02		
1/10/02 – 30/9/03		
1/10/03 – 30/9/04		
1/10/04 – 30/9/05 and onwards		

2.3.4 The Operator shall at least three months prior to the commencement of each Assessment Year during the period 1.10.2001 to 30.9.2005 inclusive submit to Agency a detailed statement of proposals for the operation of the process during the subsequent Assessment Year so as to ensure compliance with Conditions 2.3.1 and 2.3.2 above during that Assessment Year and shall not later than 28 days after the end of each quarter submit to Agency at the Central Reporting Address a detailed statement showing how the Conditions 2.3.1 and 2.3.2 have been complied with.

Flexibility

2.3.5 Subject to condition 2.3.6 below, in each of the Assessment Years commencing after 30/9/2001 the Operator B Limit specified in condition 2.3.3 above may be exceeded in each such year by:-

- (a) an amount not exceeding 30kte per gigawatt of Abated Unit; and
- (b) an amount not exceeding 37.5kte per gigawatt of Abated Unit under Construction.

2.3.6 The provision in 2.3.5 above shall only apply subject to the following conditions:

- (a) Unless otherwise agreed by the Agency in a particular case, the Relevant Processes include one which at any time within the Assessment Year in question includes an Abated Unit under Construction or an Abated Unit.
- (b) The allowance specified in paragraph 2.3.5(b) above shall apply for a maximum period of twenty-four consecutive months in total in relation to any Unit but may be pro-rated over a number of Assessment Years during that period.

(c) Where any particular unit is an Abated Unit under Construction for part of an Assessment Year and an Abated Unit for the remainder, the allowances provided under conditions 2.3.5(a) and 2.3.5(b) shall apply pro-rata during that Assessment Year.

(d) The Operator complying at all times during the Assessment Year in question with all the conditions set out in 2.3.1 above, and

(e) Unless otherwise agreed by the Agency in a particular case, that so far as reasonably practicable, the average operating Load Factor of all Non-Abated Units has not exceeded half of the average operating Load Factor of all Abated Units during

(i) any Assessment Year in respect of which either of the allowances specified in Condition 2.3.5 above is to be used, or

(ii) either of the immediately preceding two Assessment Years (but in relation to any assessment year prior to 1/10/2001 this paragraph shall be construed as if the word "half" above was replaced by 0.75).

in either case, disregarding any period in which the Operator had no Abated Units.

(f) Unless the Agency otherwise agrees in any particular case, the Operator notifying the Agency at least 21 days before any occasion on which the Operator B-Limit is exceeded as provided for in condition 2.3.5 above.

(g) [The Operator complying at all times with the requirements of condition X [above/below].

[Note: Condition X will contain requirements in respect of the construction/commissioning of Abated Units under Construction. Neither condition X nor condition 2.3.7 will apply in cases where no Relevant Process will have an Abated Unit under Construction during the relevant period].

For West Burton this is already under consideration.

For Fiddlers Ferry and Ferrybridge this will not be relevant until after engineering studies.

[THIS CONDITION WILL BE SITE SPECIFIC.]

Provision for FGD operation and breakdown

2.3.7 In the case of a Process which includes at least one Abated Unit the Operator shall ensure that:

(a) no Abated Unit within the Process operates at any time without the simultaneous operation of its FGD except where necessary for the duration of:

- (i) periods of start-up and/or shutdown as agreed in writing with the Agency.
 - (ii) periods during which there is a risk of instability to the National Grid which meets criteria previously agreed in writing with the Agency, and
 - (iii) periods during which immediate essential inspection maintenance or repairs require the non-operation of FGD on any Abated Unit for a period not exceeding 24 hours, and
 - (iv) periods during which a Unit is "Temporarily Non-Abated" as defined in conditions 2.3.8 to 2.3.10 below
- (b) no Non-Abated Unit, nor so far as reasonably practicable, any Abated Unit otherwise permitted to operate without the simultaneous operation of its FGD unit under 2.3.7 (a)(iii) above, shall operate in preference to an Abated Unit which is available for service.
- (c) reports in the format of form S2/ESI 06 in Schedule 2 shall be provided each Reporting Period in writing to the Agency for each Abated Unit and for the total of all the Abated Units including at least the following information:
- (i) sulphur removal efficiency; and
 - (ii) Availability, listing any off-line periods, and including duration and reasons in each case.

2.3.8 For the purpose of this authorisation an Abated Unit is "Temporarily Non-Abated" only for the duration of any circumstances specified in paragraph 2.3.9 ("the Circumstances") provided that the operator complies with the conditions specified in paragraph 2.3.10 ("the Conditions") and provided that an Abated Unit shall not in any event be Temporarily Non-Abated for a period of more than 5 months in respect of any one instance of any circumstances notified to the Agency under condition 2.3.10(a) below.

2.3.9 The Circumstances referred to in 2.3.8 above are where the FGD on a Unit is shut down:

- (a) because the continued operation of the FGD on a Unit could result in a risk of loss of life or injury to persons or
- (b) as a result of other particular circumstances (such as, but not limited to, requirements for essential inspection maintenance or repair of either the FGD or the unit on which it operates not falling within 2.3.7 (a)(iii) and which otherwise reasonably justify the temporary non-operation of FGD.

2.3.10 The Conditions referred to in 2.3.8 above are that the Operator shall:

- (a) inform the Agency no later than 48 hours after the commencement of the Circumstances, providing reasons for the non-operation of FGD on any Unit, an

estimate of the anticipated duration of the Circumstances and an indication of the steps being taken and proposed to be taken to remedy and/or mitigate the extent and duration of the Circumstances

(b) for the duration of the Circumstances use best available techniques not entailing excessive costs to remedy and mitigate the extent and duration of the Circumstances

(c) if the Circumstances are estimated to be likely to continue for more than 4 months the operator shall apply to the Agency within 14 days of the commencement of the Circumstances for a variation to this authorisation pursuant to S11 EPA 90 to permit the continued operation of the Unit or Units without FGD from such time as they cease to be Temporarily Non-Abated

(d) for the duration of the Circumstances provide to the Agency such information, assistance and facilities as the Agency may reasonably require to enable it to ensure that the above conditions 2.3.10 (a)-(c) are at all times being complied with.

2.3.11 Subject to condition 2.3.12 below, for the purposes of condition 2.3.2, when calculating the aggregated mass release of SO₂ in any Assessment Year during which a Unit within the Authorised Process has been a Temporarily Non-Abated Unit, the releases from the Temporarily Non-Abated Unit shall be taken to be equivalent to the releases which would have been made from that Unit had it in fact been an Abated Unit.

2.3.12 The provision in condition 2.3.11 above shall only apply subject to the following conditions:

(a) the Unit in question must have been a Temporarily Non-Abated Unit by reason of Circumstances arising under 2.3.9(a) above or in any other case the Agency's prior written agreement (not to be unreasonably withheld) to the application of the provision in condition 2.3.11, must have been obtained by the operator, following a request made to the Agency at a time no later than when the operator provided information to the Agency under condition 2.3.10(a) above.

(b) For the duration of the Circumstances the Operator shall have used only fuel with as low a sulphur content as reasonably practicable (having regard inter alia, to any fuel in stock or due for imminent delivery, and to local air quality requirements).

2.4 Releases of Nitrogen Oxides

[SITE SPECIFIC AS NOW]

2.4.1 The annual aggregated mass releases of oxides of nitrogen from release points specified in Table 2.1 shall not exceed the limits specified in column (2) of Table 2.6.

Table 2.6	
Assessment Year(s) (1/10 to 30/9)	Site Annual Release Limit for Oxides of Nitrogen tonnes (a)
(1)	(2)
1999-2000	
2000-2001	
2001 and subsequent years	

(a) In the absence of an agreed protocol based on the continuous measurement of oxides of nitrogen, the release of oxides of nitrogen shall be calculated in accordance with the formula (or such other formula as the Agency may accept) -

$$\text{Oxides of nitrogen released (tonnes)} = [(Tc \times Nc) + (To \times No)] \times 0.001 \text{ where -}$$

[Example of site specific factors]

Nc = emission factor for NO_x when burning coal (an emission factor of 8.1 for units 1 to 3 and 5.75 for units 4 to 6 shall be used);

No = emission factor for NO_x when burning oil (an emission factor of 11.2 for HFO and 2.6 for gas oil shall be used);

Tc = coal burned (tonnes);

To = oil burned (tonnes).

[For those stations with concentration limits then they are to be kept. Clearly RFO factors where relevant need adding.]

PART 3

RELEASES INTO CONTROLLED WATERS

3.1 A release from the Authorised Process into controlled waters from a release point specified in Table 3.1 shall arise only from the source specified in and shall be released only into the receiving waters specified in that Table.

Release Point Number	Source	Receiving Waters
W1	Purge Water	River Ouse
W2	FGD Effluent	River Ouse
W3	Oil-water separator North	River Ouse
W4	Oil-water separator South	River Ouse
W5	Boiler Water Treatment Plant	River Ouse

3.2 There shall be no release from the Authorised Process into a public sewer of any substance prescribed for water for which no limit is specified in Tables 3.2 and 3.3 except in a concentration which is no greater than the background concentration.

3.3 A release from the Authorised Process into controlled waters from a release point specified in Tables 3.2 and 3.3 shall not exceed the limit for that release point in relation to any parameter specified in those Tables.

Determinands	Release Limit
Cadmium mg/l	0.05
Mercury mg/l	0.02
pH maximum	9
pH minimum	6
Oil	Non visible
Temperature °C	30
Free Residual Chlorine mg/l	0.1

Table 3.3 Outlet W2			
Determinand	Concentration mg/l	Monthly load Kg	Annual load Kg
Mercury	0.05	4.4	40
Cadmium	0.05	5.5	50
Silver	0.05	5.5	50
Nickel	0.20	44	400
Arsenic	0.50	66	590
Copper	0.50	66	590
Lead	0.50	66	590
Antimony	0.50	110	980
Tin	0.50	110	980
Vanadium	0.50	110	980
Chromium	1.0	110	980
Zinc	1.0	110	980
Selenium	1.0	220	1,960
Iron	2.0	435	4,000
Aluminium	3.0	650	5,900
Manganese	3.0	650	5,900
Molybdenum	5.0	1085	9,800
Fluoride	20.0	4340	39,200
Boron	-	16,850	153,000
Flow	10,000 m ³ /d		

- 3.4 Liquors from the off-line chemical cleaning of boilers and condensers shall not be released into controlled waters without the prior agreement of the Agency.

[AN EXAMPLE OF SITE SPECIFIC]

PART 4

RELEASES INTO SEWER

4.1 No release from the Authorised shall be made into any public sewer.

[AN EXAMPLE OF SITE SPECIFIC]

PART 5

RELEASES INTO ON-SITE EFFLUENT-TREATMENT PLANT

5.1 There is no on-site effluent treatment plant.

PART 6

OTHER RELEASES FROM THE PROCESS

- 6.1** The Operator shall have a written management procedure which in respect of all "relevant wastes/releases" from the Authorised Process -
- (a) ensures that waste materials for release are handled, treated and disposed of in the manner most appropriate to avoid pollution of the environment;
 - (b) specifies the means of control of any accumulation and storage of relevant wastes;
 - (c) specifies the routes and timetable for the disposal of relevant wastes.
- 6.2** The Operator shall review the procedure mentioned in condition 6.1 and record the results of the review in writing -
- (a) whenever changes are proposed to the procedure which might have environmental significance; and
 - (b) in any case, not less frequently than once in every period of two years.
- 6.3** The Operator shall record -
- (a) the composition, or as appropriate, the description of the relevant release;
 - (b) the best estimate of the quantity of relevant release produced;
 - (c) disposal routes for relevant waste;
 - (d) the best estimate of the quantity/ies of any relevant waste sent for recovery.
- 6.4** Materials arising which will be a relevant release shall only be stored on the site in the location and manner described in the Application.

[ANY SITE SPECIFIC MATTERS]

PART 7

REPORTING REQUIREMENTS

- 7.1 The Operator shall, in respect of the parameters and release points specified in the Forms in Schedule 2, report the results of such samples and analyses, calibrations, examinations, measurements, tests and surveys as are taken and carried out in accordance with condition 1.7. and of any assessment made in accordance with condition 1.8.
- 7.2 The reports mentioned in condition 7.1 shall -
- (a) be made for the reporting periods and on the forms specified in that Table; and
 - (b) be sent to the Environment Agency at the Reporting Address within 28 days of the end of the reporting period to which the results refer.
- 7.3 The Operator shall by not later than 31 January in each year -
- (a) complete an ISR Reporting Form in respect of the operation of the Authorised Process during the previous year, in accordance with the instructions and definitions included with the Form. This is in addition to any other requirement in this Authorisation for the reporting of annual releases.
 - (b) send the completed Form to the Environment Agency at the Reporting Address, with 2 copies thereof.
 - (c) make a record of calculations, estimations and assumptions made in determining the annual releases reported on the ISR Reporting Form. This record shall be retained for a period of not less than 4 years.
 - (d) where a substance is listed in the ISR Reporting Form for releases to an environmental medium, any requirement in an existing condition for reporting annual mass releases of the substance to that medium shall no longer apply, unless that condition required, in respect of that medium, the separate reporting of annual mass releases from different release points.
- 7.4 The Operator shall supply to the Environment Agency at the Reporting Address on demand and without charge a copy of any specified or operational records as may be required.
- 7.5 The Operator shall also send completed forms S2/ESI 01 and S2/ESI 03 in Schedule 2 to the Agency at the Central Reporting Address within 28 days of the end of each reporting period.

PART 8

IMPROVEMENT PROGRAMME

The Operator shall complete the requirements specified in Table 8.1 by the date specified in that table and shall notify the Environment Agency, at the Reporting Address, of the date of completion of those requirements.

TABLE 8.1		
Reference	Requirement	Date
8.1	The Operator shall submit in writing to the Agency an outline statement of proposals for the operation of the Process so as to ensure compliance with conditions 2.3.1 to 2.3.3 above during the whole of the period 1/10/2001 to 30/9/2005 inclusive.	1/10/2000
8.2	The Operator shall submit in writing to the Agency proposals for the operation of the Process for the four year period commencing 1/4/2004, including in particular proposals for further operating improvements and consequent revisions in limits for Assessment Years beyond 30/9/2005; all such proposals to be based on an assessment of the requirements of EPA90, but having regard also to any implications arising from the implementation of Directive 96/61/EC.	1/4/2003
8.3	<p>The Operator shall submit in writing to the Agency a programme for producing a Management Plan which will ensure that the Authorised process meets the National Air Quality Strategy objectives by 2005 for sulphur dioxide, oxides of nitrogen and particles (PM10) having taken account of general background, concentrations in the atmosphere, including those arising from other power stations.</p> <p>The Management Plan shall define:</p> <ol style="list-style-type: none"> (1) The current environmental impact compared to the objectives. (2) If relevant what firm plans are being developed and by when to ensure breaches of objectives do not occur. (3) What plans are in place to ensure the operator updates assessment in light of new environmental data, models and other relevant matters and reviews progress on an annual basis. 	1/6/2000
8.4	<p>The Operator shall submit in writing to the Agency a programme for producing a plan for monitoring the environment to support the management plans proposed in 8.3 above.</p> <p>The plan shall contain proposals, with timescales, for the installation of at least one monitoring station sited as close as is reasonably practical to the place which allows the impact of the station and, if applicable, the station in combination with other stations to be representatively monitored against the NAQS objectives for relevant substances. The number and specification of monitors shall be justified in the plan. It is expected this monitoring shall be installed by 2001.</p> <p>The raw data shall be made available to the Agency along with equivalent raw data on pollutant release, volumetric flow of stack gas, flue gas temperature and relevant meteorological conditions in a form for use in an atmospheric dispersion model such as ADMS 3 or equivalent.</p>	1/6/2000

8.5	The Operator shall characterise the performance of representative particulate monitoring and sampling equipment across a representative range of fuels and operating conditions. The Operator shall submit a guidance document on compliance assurance and calibration procedure, agreed appropriate for the Operator's particulate emission monitoring requirements by the Environment Agency, and on the other matters of definition and interpretation of the requirements of Part 2.2 and the treatment of data from continuous particulate monitors to indicate how the operator intends to demonstrate compliance with the limits in Table 2.3.	31/12/2000
8.6	The Operator shall review the operation of the process against the forthcoming Government guidance which describes best practice in relation to the implementation of the Groundwater Regulations SI 2746, 1998 and propose any necessary improvements.	Six months after issue of the Guidance
8.7	The Operator shall submit in writing to the Agency a plan to if necessary reduce the sulphur content of any oil burnt in the process from the levels delivered in 1998 to 1% or less by 1/1/2003.	1/10/2000
8.8	The Operator shall submit a written protocol to the Environment Agency with a view to delivering a nationally consistent approach for the assessment of fuel sulphur content and the specific requirements of conditions 2.1.3 to 2.1.6.	1/6/2000
8.9 [Non-FGD only]	The Operator shall submit in writing to the Agency a reasoned justification, in accordance with the principles of EPA 90, for any proposal to use, after 30/9/2001, any Non-Abated Unit at a Load Factor which exceeds 40%.	1/6/2000
8.9 [FGD only]	The Operator shall submit in writing to the Agency proposals, in accordance with the principles of EPA90 and having regard to the capabilities of new sulphur dioxide abatement plant for the upgrading of all sulphur dioxide abatement plant fitted to Abated Units at the date of this variation notice so as to achieve before 30/9/2003, improved sulphur dioxide removal efficiencies and availability, and increased speed and timing of start up. The report shall also include performance against load factor and coal sulphur content curves for existing plant and proposed improvements in the form of tes SO ₂ produced per GWh sent out.	1/10/2000
8.10 [Non-FGD only]	The Operator shall submit in writing to the Agency a reasoned justification, in accordance with the principles of EPA90, for any proposal to use coal having over any Assessment Year, an average sulphur content higher than 1.2% in any Non-Abated Unit within the Process after 30/9/2001.	1/10/2000
8.10 [Fiddlers Ferry & Ferrybridge]	The Operator shall submit in writing to the Agency a review of the fitting of FGD to one or more coal fired units in line with the principles of EPA 90.	1/3/2000
8.11 [Non-FGD]	The Operator shall submit in writing to the Agency a statement on the expected life and capacity of the Authorised Process and shall update that statement after each business review carried out by the Operator (or annually whichever is the shorter) made by the Operator.	1/10/2000 and after each review period
8.12 [*]	The Operator shall provide in writing a site specific programme for the installation by 1/1/2001 of continuous particulate, sulphur dioxide and oxides of nitrogen monitoring and recording equipment downstream of any abatement plant. The particulate equipment shall be capable of demonstration compliance with the conditions in part 2.2.	1/4/2000

[*][Site specific Condition if the station does not have NO_x or SO₂ or particulate monitors.

Fawley (S,N)	Blyth (S,N)	Grain (S,N)	Littlebrook (S,N)	Tilbury (S)	Kings North (S,N)	Drax] (N,P)
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PART 9

INTERPRETATION

[ADD SITE SPECIFIC ONES, EG RFO]

9.1 In this Authorisation the following expressions have the meanings hereby assigned to them.

"S.11 EPA 90" means Section 11 of the Environment Protection Act 1990

"Abated Unit" means a Unit which is fitted with fully commissioned and operational FGD and does not include a Unit which is "Temporarily Non-Abated" within the meaning of conditions 2.3.8 to 2.3.10 above save for the purposes of condition 2.3.5 above where a "Temporarily Non-Abated Unit" shall count as an Abated Unit.

"Abated Unit under Construction" means a Unit on which construction of FGD has commenced and where overall commissioning of that abatement plant is scheduled to be completed within no more than 2 years, and by 1.1.2005 at the latest.

"The Application" means the application by the Operator dated and his responses to any Notices served under Schedule 1 of the 1990 Act and any additional information supplied by the Operator in writing before the date of authorisation, together with the applications for Variation by the Operator dated (put in all dates) and his response to any Notices served under Section 11(7) of the 1990 Act; and any additional information supplied by the Operator in writing before the date of issue of the relevant variation.

"Assessment Year" means any complete year running from 1st October in one calendar year to 30th September in the next calendar year.

[FGD only] "Availability" of FGD plant means for each FGD unit the time that unit is in operation divided by the time that the associated boiler plant is in operation, excluding only periods of start-up and shut-down of the boiler plant as agreed in writing with the Agency.

"Authorised Process" means the process subject to this authorisation.

"Background Concentration" has the same meaning as in Regulation 4(7) of the Environmental Protection (Prescribed Processes and Substances) Regulations (S.I.1991/472).

"BOD" means biological oxygen demand;

"Central Reporting Address" means the address, from time to time notified to the Operator, for that purpose by the Environment Agency in writing.

"Controlled Waters" shall have the same meaning as in Part III of the Water Resources Act 1991;

"Dioxins" means polychlorinated dibenzo-p-dioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs);

"FGD" means sulphur dioxide abatement plant which has been agreed by the Agency as FGD for the purposes of this authorisation.

"Gross Registered Capacity" means the capacity as defined in Appendix 1 of Schedule 9 of the Pooling and Settlement agreement.

"ISR Reporting Form" means the Form reference ISR/98 dated 25/11/98 - published by the Agency for the purpose of obtaining information from Operators on annual mass releases of specified substances to air, water and on the mass of special and/or non-special waste sent for disposal recovery or treatment.

"I-TEQ" means the Toxic Equivalent. The TEQ value as a release limit is compared to a measurement of a number of different dioxins and furans by multiplying their mass concentrations by equivalence factors. Equivalence factors can be found in the Environment Agency Process Guidance Note S2 5.01;

"Load Factor" is the actual generation sent out from the Unit or Station in a year or assessment year divided by the Gross Registered Capacity of the Unit or Station and by 8760 hours, and when averaging them it is the total generation sent out from all Units being averaged in the year or assessment year divided by the sum total of the Gross Registered Capacity of these Units and by 8760 hours.

"Non-Abated Unit" means a Unit within a Relevant Process which is not fitted with fully commissioned and operational FGD but does include a Unit which is "Temporarily Non-Abated" save for the purposes of condition 2.3.5 above where a "Temporarily Non-Abated Unit" shall count as an Abated Unit.

"NO_x" means oxides of nitrogen;

"Oil" does not include emulsions of bitumen;

"Operator" means the holder of this Authorisation.

"PAH" means polycyclic aromatic hydrocarbons to include Pyrene, Chrysene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)anthracene, Benzo(a)pyrene, Dibenzo(ah)anthracene, Benzo(ghi)perylene, Naphthalene, Coronene, Acenaphthylene, Indenol(123)pyrene, Acenaphthene, Fluorene, Phenanthrene, Anthracene, Fluoranthene;

"PM₁₀" means particulate matter with an aerodynamic diameter of less than 10 micrometers.

"Public Sewer" has the same meaning as in the Water Industry Act 1991;

"Release Point" with the letter A, W, E or S means respectively a point shown on a map or plan forming part of the Application for the release from the Authorised Process into the air, into controlled waters, into an on-site effluent treatment plant or into a public sewer.

"Relevant Processes" means all combustion processes carried on by the Operator which are subject to authorisations containing conditions equivalent to conditions in 2.3.1 to 2.3.3 and "Relevant Process" means any one such process carried on by the Operator.

"Relevant Wastes/Release" means all wastes, other than releases into the air, controlled waters, any on-site effluent treatment system or any public sewer, arising from the Authorised Process.

"Reporting Address" means the address, from time to time notified to the Operator, for that purpose by the Environment Agency in writing.

"Reporting Period" means the twelve periods of not less than four weeks in any year by reference to which reports are compiled and notified to the Environment Agency by the Operator before the 1st September in the previous year;

"Substance Prescribed for Water" means a substance prescribed by regulation 6(2) of the Environmental Protection (Prescribed Processes and Substances) Regulations (S.I.1991/472) and set out in Schedule 5 to those Regulations;

"Total PCBs" means combined declaration for seven targeted analytes (IUPAC Nos 28, 52, 101, 118, 138, 153 and 180) together with analysis of the non-targeted groups, tri, tetra, penta, hexa and hepta chlorobiphenyl;

"Unit" means a generating unit within a Relevant Process.

"Year" means calendar year.

"mg/m³" means milligrammes per cubic metre.

"mg/l" means milligrammes per litre.

9.2 References in any condition to a release not exceeding a limit shall, in relation to a limit expressed to be a minimum, mean that the release shall not be less than that limit.

9.3 No condition in this Authorisation applies so as to regulate or apply to the final disposal by deposit in or on land of controlled waste within the meaning of Part II of the Environmental Protection Act 1990.

9.4 Unless otherwise stated, references to concentrations of substances in releases into air mean -

(a) in relation to combustion gases, the concentration in dry air at a temperature of 273 K, at a pressure of 101.3 kPa and with an oxygen content of 3% dry for liquid and gaseous fuels, 6% dry for solid fuels.

(b) in relation to non-combustion gases, the concentration at a temperature of 273 K and at a pressure of 101.3kPa, with no correction for water vapour content.

9.5 Any reference to the notification of information on a form set out in Schedule 2 or 3 may be made on a form substantially to the like effect as the form referred to.

SCHEDULE 1

NOTIFICATIONS IN ACCORDANCE WITH CONDITION 1.12

Part A

Name of Operator.

Location of Process.

Date information provided.

Name[s] of the prescribed substance[s] or other substance[s] which might cause harm.

Time, date and location of the release.

Best estimate of the quantity of the substance[s] released or the rate of release and the time during which the release took place.

Environmental medium into which the release took place.

Measures taken, or intended to be taken, to stop the release.

Part B

Any more accurate information on the quantity of the substance[s] released or the rate of the release.

Measures taken, or intended to be taken, to prevent a recurrence of the incident.

Measures taken, or intended to be taken, to rectify any environmental damage which has been or may be caused by the release.

The dates of any previous Notifications from the process which have taken place in past 2 years.

NOTE

(a) If any information supplied is considered confidential, a statement of which information this applies to and the reasons why must be specified.

(b) Units used in Part A and Part B shall be the same as those specified for similar releases in this Authorisation.

SCHEDULE 2

REPORTING OF MONITORING DATA

[A SITE SPECIFIC EXAMPLE]

Parameters for which data shall be reported, in accordance with Part 7.1 of this Authorisation, are listed below.—

The data should be submitted on forms included with this Schedule.

TABLE A			
Parameter	Release Point	Reporting period	Form Number
Operating Parameters		Monthly	S2/ESI01
Sulphur Dioxide	Boiler 1-x	Monthly	S2/ESI03
Nitrogen Dioxide	Boiler 1-x	Monthly	S2/ESI03
Particulates (extractive samples)	Boiler 1-x	Annual	S2/ESI02
Particulates	Boiler 1-x	Monthly	S2/ESI05
Mercury	W2 (site specific example)	Monthly	S2/ESI04
Cadmium	W2	Monthly	S2/ESI04
Silver	W2	Monthly	S2/ESI04
Nickel	W2	Monthly	S2/ESI04
Arsenic	W2	Monthly	S2/ESI04
Copper	W2	Monthly	S2/ESI04
Lead	W2	Monthly	S2/ESI04
Antimony	W2	Monthly	S2/ESI04
Tin	W2	Monthly	S2/ESI04
Vanadium	W2	Monthly	S2/ESI04
Chromium	W2	Monthly	S2/ESI04
Zinc	W2	Monthly	S2/ESI04
Selenium	W2	Monthly	S2/ESI04
Iron	W2	Monthly	S2/ESI04
Aluminium	W2	Monthly	S2/ESI04
Manganese	W2	Monthly	S2/ESI04
Molybdenum	W2	Monthly	S2/ESI04
Flouride	W2	Monthly	S2/ESI04
Boron	W2	Monthly	S2/ESI04

SCHEDULE 2 : FORM S2/ESI01 : FUEL USE AND DETAILED RELEASE DATA

Operator :

Location Power Station

Release data for the reporting period _____ to _____

Operating Details	Boilers	Gas Turbines	Total
	1 to x	1 to y	
Coal (tonnes)			
Coal sulphur content (%)			
Coal NOx factor			
HFO (tonnes)			
HFO sulphur content (%)			
HFO NOx factor			
Gas oil tonnes			
Gas oil sulphur content (%)			
Gas oil NOx factor			
Other fuels tonnes			
Other fuels sulphur content (%)			
Other fuels NOx factor			
Sulphur Dioxide (tonnes)			
Nitrogen Oxides (tonnes)			
Carbon Dioxide (tonnes)			

NB Details of fuel relate to fuel burned during the reporting period

[Need to add RFO for those stations which burn it.]

SCHEDULE 2 : FORM S2/ESI02 : Extractive Particulates Sampling

Operator :

Location Power Station

Release data for the reporting period _____ to _____

Boiler No	% MCR during sampling period	Measured concentration (mg/m ³)	Average particulate concentration by continuous monitor during sampling period	Sampling date and period

SCHEDULE 2 : FORM S2/ESI03 : SO₂ and NO_x Release Data

[NON FGD]

Operator :

Location Power Station

Release data for the reporting period _____ to _____

Reporting Period	Dates of Reporting Period	SO ₂			NO _x		SO ₂ /GWh (c)
		Actual (tonnes)	(a) Total year to date (tonnes)	(b) Current Allocation (tonnes)	Actual (tonnes)	(a) Total year to date (tonnes)	
01 (Oct)							
02 (Nov)							
03 (Dec)							
04 (Jan)							
05 (Feb)							
06 (Mar)							
07 (Apr)							
08 (May)							
09 (Jun)							
10 (July)							
11 (Aug)							
12 (Sep)							
TOTAL							

- (a) Total means total of the current and previous reporting periods in the reporting year.
- (b) "Current Allocation" means the yearly process B limit allocation.
- (c) The generation in GWh is that dispatched from the station resulting from the combustion of coal and oils.

SCHEDULE 2 : FORM S2/ESI03 : SO₂ and NO_x Release Data

[FGD]

Operator :

Location Power Station

Release data for the reporting period _____ to _____

Actual (tonnes)	Dates of Reporting Period	SO ₂					NO _x		(c) SO ₂ /GWh
		Actual (tonnes)	(a) Total Actual Year to date (tonnes)	(b) Current Allocation (tonnes)	(d) Calculated (tonnes)	(e) Calculated Total year to date (tonnes)	Actual (tonnes)	(a) Total year to date (tonnes)	
01 (Oct)									
02 (Nov)									
03 (Dec)									
04 (Jan)									
05 (Feb)									
06 (Mar)									
07 (Apr)									
08 (May)									
09 (June)									
10 (July)									
11 (Aug)									
12 (Sep)									
TOTAL									

- (a) Total means total of the current and previous reporting periods in the reporting year.
- (b) "Current Allocation" means the yearly process B limit allocation.
- (c) GWh generation is that dispatched from the station resulting from the combustion of coal and oils and SO₂ is calculated SO₂.
- (d) Calculated tonnes as calculated by condition 2.3.11 if Agency has accepted breakdown provisions fully complied with.
- (e) Total year to date based on calculated tonnes.

SCHEDULE 2 : FORM S2/ESI04 : Monthly Releases from FGD to Controlled Waters

Operator :

Location Power Station

Release data for the reporting period _____ to _____

Determinand	Monthly load kg
Mercury	
Cadmium	
Silver	
Nickel	
Arsenic	
Copper	
Lead	
Antimony	
Tin	
Vanadium	
Chromium	
Zinc	
Selenium	
Iron	
Aluminium	
Manganese	
Molybdenum	
Fluoride	
Boron	

SCHEDULE 2: FORM S2/ESI05: Monthly Statistical Analysis of Continuous Monitoring

Data for Particulates (a)

[NON FGD]

Operator :

Location Power Station

Release data for the reporting period _____ to _____

	No1	No 2	No3	No 4	No 5	No 6	Station
Operating hours							
Reporting Period average							
No of exceedances of 24 hr limit in period							
No of averaging intervals in period							
Highest individual 24 hour average in period (mg/m ³)							
Mean 24 hr average in period (mg/m ³)							
No of exceedances of 1 hr average in period							
No of averaging intervals in period							
Highest individual 1 hr average in period (mg/m ³)							
Mean 1 hr average in period (mg/m ³)							
Percentage of boiler operating time that continuous monitors available during reporting period.							

- (a) Form to be used as soon as appropriate recording equipment and software commissioned, taking due account of the guidance delivered by Conditon 8.5, and no later than 1 April 2001

SCHEDULE 2: FORM S2/ESI05: Monthly Statistical Analysis of Continuous Monitoring

Data for Particulates (a)-(b)

[FGD]

Operator :

Location Power Station

Release data for the reporting period _____ to _____

	No1	No 2	No3	No 4	No 5	No 6
Operating hours						
Reporting Period average						
No of exceedances of 24 hr limit in period						
No of averaging intervals in period						
Highest individual 24 hour average in period (mg/m ³)						
Mean 24 hr average in period (mg/m ³)						
No of exceedances of 1 hr average in period						
No of averaging intervals in period						
Highest individual 1 hr average in period (mg/m ³)						
Mean 1 hr average in period (mg/m ³)						
Percentage of boiler operating time that continuous monitors available during reporting period.						

(a) Form to be used as soon as appropriate recording equipment and software commissioned, taking due account of the guidance delivered by Condition 8.5, and no later than 1 April 2001.

(b) Separate reporting shall be submitted for periods of Abated and Non-Abated operation, if any. Each report shall be clearly labelled to show whether it related to Abated or Non-Abated operation.

SCHEDULE 2 : FORM S2/ESI06 : FGD AVAILABILITY and EFFICIENCY DATA

[FGD ONLY]

Operator :

Location Power Station

Data for the reporting period :

Unit	FGD Availability	FGD Efficiency	Duration and Reasons for Loss of Availability
1			
2			
3			
4			
5			
6			
Station Average			