TECO MG
12/20/99

Model Clearinghouse Information Storage and Retrieval System

Record Information Report

Record Number: 99-IV -03 Fiscal Year: 1999 Region: 04 Last Update:
Name: TECO Stack Height Increase-April 99 10/06/99

State(s): FLORIDA
Pollutant(s): SO2
Regulation(s): SIP
Source(s): Power Plant
Model(s): UNSPECIFIED
Subject(s): Not Found!
Urban/Rural: Rural Only
Oral/Written: Oral
Terrain: Low Terrain (below stack height)
Guideline: Guideline
Database: Off-site
Involvement: Review and Comment
Record Comments:

There were 2 main issues with this utility stack height increase. The first issue dealt with whether
the source had to do a fluid modeling exercise to establish the allowable GEP above 65 meters.
The resolution of this issue was yes they do. The background and reasoning on this issues is
documented as Issue 1 below.
The second issue was, given the completed fluid modeling establishing GEP above the height of
the existing stack, can the source be allowed to increase their stack up to a height less than GEP,
i.e. to a height where modeling with ISC3 shows that even with downwash effects, there is no
longer a violation of the NAAQS. The resolution of this issue was yes, they can, and the
correspondence and reasoning is documented as Issue 2 below.
Issue 1: April 28, 1999 1:24 PM
Subject: Stack height increase
>
> There is this major utility
> that has downwash problems identified in air dispersion modeling of
> their current emission limits for two stacks. The stack heights are

> 96m but below the GEP formula stack height of 133 m as determined by
> BPIP. SO2 NAAQS violations occur for the 24-hour averaging period
> using the actual stack height. The Company's consultant determined
> through air dispersion modeling with the ISC3 model that raising the
> stack to 110 m would resolve the downwash problems and the NAAQS
> violations.
>
> The stack height regulations requires a demonstration for raising a
> stack above the 65 m de minimis stack height. The GEP Technical
> Support Document states that a demonstration may be required to
> increase the stack height to the formula GEP height. It is rather
> silent on whether or not a demonstration is required to incrementally
> raise a stack up to the GEP formula height. Past memos from the old
> SO2/Particulate Matter Programs Branch, specifically the 10/16/1991
> memo, "Dade County, Florida, Stack Height Increase" from Gwen Jacobs
> to Lew Nagler states that beyond the 65 m deminimis threshold, there
> is no de minimis exemption for stack height increases. I have written
> the State and the companies to state that a fluid modeling
> demonstration is required for stack height increases above the 65 m
> threshold to be creditable in regulatory modeling. Credit for
> incremental increases up to the formula GEP height are not allowed
> unless the fluid modeling demonstration is performed. the formula
> height is the height that one would normally build a stack to avoid
> downwash problems. If this is not originally done, he stack height
> regulations must be followed. The company does not see a need for this
> to justify such a small increase in the actual stack height and wants
> to know if some other discretionary provisions exist for allowing the
> proposed 110 m to be used in setting the emission limits. I do not
> know of any.
>
> Please provide some input on the following questions:
>
> 1. The outstanding question here is whether or not fluid modeling is
> required to use the 110 m stack height in the setting of an emission
> limit.
>
> 2. If some demonstration is required, may air dispersion modeling be
> used. The company has performed ISC3 modeling using the 96 km stack
> height with and without downwash and shows that the high-second-high
> concentrations exceeding the 40% excessive concentration criteria is
> met which justifies a higher stack using 5 years of meteorological
> data for the 24-hour averaging period only. Is this approach allowed
> under the stack height regulations? I do not think so.
>
>

> If I am in error in my assumptions or reading of the regulations and
> TSD please let me know where the error occurred. I have to give the
> state some answer soon. Let me know when you can get to this issue.
> Thanks
> 3. Should the other SO2 averaging periods be addressed in the ISC
> modeling demonstration for excessive concentration if the company's
> approach is acceptable.

C/H Comment: An interim comment is : Isn't the June 29 1992 Calcagni memo in effect here? This memo essentially says that stack height increases up to formula GEP are OK without a fluid modeling demo. Also look in SCRAM for Nov 29 1992 memo from Gary Blais and myself to you on CP&L plant.
Maybe Gary can confirm what I am saying.

Region IV Reply: The 1992 Calcagni and 1993 CP&L memos all relate to the need for stack height increases due to downwash problems resulting from the siting of new nearby structure. The CP&L stack increases were due to the need to replace stack in an area of new structures which required a higher stack. The 1992 memo This does not appear to be the case here. My current issue arises from the state modeling the power plant for a Title V permit. The plant was chosen because the state wanted to selectively look at the emission limits for some facilities that hadn't been modeled in recent memory. They wanted to check out compliance with the NAAQS.

The stack height regulations can be a bit confusing. However, I've often thought that the regulations assumed that an existing stack height of a facility is considered GEP unless it is demonstrated otherwise. This demonstration is by fluid modeling, unless the stack is being raised up to 65 m, unless the 5000 SO2 exemption applies, or the siting of new structures causes a problem. Therefore, regardless of what the BPIP program says the GEP height should be, you aren't allowed to raise a stack to some arbitrary height above 65 m unless fluid modeling is performed to justify that height, however small an increase.

C/H Comment: (from IPSB) Region IV is basically correct. The Calcagni memo doesn't seem to apply here, so there should be a fluid modeling demo. One or 2 fine points. They can physically raise the stack above GEP without our approval. They just can't take credit for the increase in a dispersion modeling run without justifying the increase through a fluid modeling demo or field study. Also, the 5000 tpy exemption applies only to plume enhancement techniques such as merging gas exhaust streams or manipulating other

exhaust
parameters. It does not apply to GEP questions. The height the stack was originally built to is
considered GEP unless there is a demonstration proving otherwise. Credit for above GEP
formula height cannot be granted (Calcagni memo aside) without a full demonstration to
determine if excessive concentration criteria are met.
Issue 2:

RECORD OF COMMUNICATION
_x__TELEPHONE CALL ___MEETING ___CONFERENCE CALL ___OTHER
INFORMATION COPIES TO: Warren, Brenda, Gary Blais
TO: D. Wilson
FROM: B. Johnson, Region IV
DATE: 12/7/91, 12/13/99
TIME:
SUBJ: TECO
SUMMARY OF COMMUNICATION:
Issue: The source has completed the fluid modeling and established an allowable
GEP stack height. Can they increase the height of their stack up to something less
than GEP, i.e. to a height where modeling with ISC3 shows that there is no problem
with the NAAQS?
C/H Comment: Based on conversations in 1991 regarding Container Corporation (see
below), it appears that the source does not have to increase their stack all the way
up to GEP. It would be useful if Region IV could find the approval letter for
Container Corporation.
FOLLOW UP ANTICIPATED: R-IV will look for Container Corporation file
MODEL CLEARINGHOUSE RECORDS INFORMATION:
SOURCE NAME: TECO
LOCATION: FL
SOURCE TYPE: PP
POLLUTANTS: SO2
REGULATION(S)INVOLVED: SIP revision
MET. DATA BASES Off

RECORD OF COMMUNICATION
___TELEPHONE CALL _x__MEETING ___CONFERENCE CALL ___OTHER
INFORMATION COPIES TO:

(5)

TO: D. Wilson, J. Dicke
FROM: G. Jacobs, E. Ginsburg, G. Blais
DATE: 8/28/91
TIME:
SUBJ: Container Corporation
SUMMARY OF COMMUNICATION:
Eric Ginsburg has had several contacts from the Region on this issue. He now proposes that we change our policy to allow Container to do as they propose by 1)
Establishing a stack to building height ratio below which we are confident that the
40% increase criteria is met and 2) Allow increase to heights below GEP.
C/H Comment: 1) We need to discuss with A. Huber. Any policy change should be based on empirical data, not ISC. 2) OK, depending on the outcome of Issue 1.
FOLLOW UP ANTICIPATED:
MODEL CLEARINGHOUSE RECORDS INFORMATION:
SOURCE NAME: Container
LOCATION:
SOURCE TYPE:
POLLUTANTS:
REGULATION(S)INVOLVED:
MET. DATA BASES
From: Dean Wilson
To: RTP3.RTMU258.BLAIS-GARY, PETERS-WARREN
Date: 12/15/99 8:45am
Subject: TECO Stack Height Increase
Warren--Thanks for sending the file to me
Gary--I don't remember all the details of the meeting we had way back in 1991 regarding
Container Corp. It does appear that we decided at that time that a source does not have to
increase their stack all the way up to GEP. It seemed to left hanging whether Container did not
need to do fluid modeling to support any increase (i.e., could they base a stack height increase on
ISC modeling alone?)
Can you shed any futher light on this issue?
From: GARY BLAIS
To: wilson-dean
Date: 12/15/99 11:21am
Subject: TECO Stack Height Increase -Forwarded -Reply -Forwarded
Eric Ginsburg was the staffer on watch in 1991, I was at Region I. Here's Eric's response.
Gary
From: ERIC GINSBURG

(6)

To: BLAIS-GARY
Date: 12/15/99 11:10am
Subject: TECO Stack Height Increase -Forwarded -Reply
This was one of those cases where most of us had a gut reaction that they weren't trying to get away with anything and that if push came to shove, they would be able to make their case. There was a discussion with John Calcagni about a relaxation of the policy on demonstrations for sources seeking to go up to but not greater than formula GEP, i.e., allowing them to presume the existence of downwash > 40% and model with ISC and the proposed stack height increase and existing emission rate to show whether they could overcome the exceedance half of the requirement. However, no one in the management chain agreed to the change (and OGC balked), so our position remains that one cannot use a dispersion model such as ISC top justify a stack height increase, on the grounds that it assumes the case it is trying to prove (i.e., significant downwash-related concentrations).
From: Dean Wilson
To: RTPMAINHUB.INTERNET.JOHNSON-BRENDA, RTP3.RTMU258.G...
Date: 12/15/99 12:06pm
Subject: TECO Stack Height Increase -Forwarded -Reply -Forwarded -Forwarded
Brenda--See Eric's attached comments. It sounds to me that you have done the right thing in requiring that a fluid modeling demo be done for TECO. The second part of the question, of course is, once they have completed the fluid modeling and established GEP (which TECO has done already), can they per permitted to increase the stack only part way up to GEP. Unless Eric disagrees, I think we did establish with Container, and by example, others since then, that they do not have to increase their stack all the way up to the fluid modelling GEP height. Although Jim Dicke was opposed to allowing that, I think we would really have a hard time trying to force a source to build a taller stack than is really needed to meet the NAAQS, according to ISC.
If you disagree, Eric, let us know.
CC: RTP3.RTMU258.BLAIS-GARY, PETERS-WARREN
From: ERIC GINSBURG

(7)

To: RTPMAINHUB.INTERNET.JOHNSON-BRENDA, RTP10.RTPTSD.W...
Date: 12/15/99 12:44pm
Subject: TECO Stack Height Increase -Forwarded -Reply -Forwarded -Forwarded -Reply

I agree with Dean's assessment. While we all might agree that, logically, someone who wants to model to determine GEP would then be expected to build a GEP stack, if someone wants to build a stack that's taller than current, but shorter than GEP could certainly do so. One very important caveat: if they do build a sub-GEP stack, they ought to be required to demonstrate that, at that planned height and whatever emission limit they are subject to, they will show compliance with the NAAQS, even under the downwash conditions that are likely to persist.

CC: RTP10.RTPTSD.PETERS-WARREN, BLAIS-GARY