 Austin Powder Argentina S.A. División Petroquímica	N₂O ABATMENT Design alternatives			ANEXO-006- Project Options
	Classification D	Review: 0 Date: 28/02/25	Next review:- Date: -	Page 1 de 3

This document details the various N₂O and NO_x abatement project options to be presented by the bidders. Each bidder is expected to include in its bid all of the alternatives mentioned below.

In addition, they must complete **ANNEX-005-Minimum Information Required** for each of the proposals they submit.

Option 1:

A) Increase the diameter of the existing by-pass of the 10-BO-156 boiler to achieve abatement inlet temperatures up to 550°C (operating range 480°C-550°C, depending on the temperature jump in the abatement based on the NO_x-NO₂ gas content).

B) Incorporate a 10-R-204 abatement reactor (SCR+ N₂O).

C) Eliminate boiler 10-BO-155 with the objective of reaching a minimum expander temperature of 550°C (550°C-620°C).

The tail gases coming from the 10-E-151 exchanger (reaction gas vs. tail gas) enter the 10-BO-156 equipment at a temperature of 550°C and are cooled in this reboiler up to 480°C (maximum temperature reached of 485°C with the existing by-pass completely open). In this option, the reboiler will be maintained, but it will be necessary to increase the existing by-pass in order to reach up to 550°C inlet to the chiller.

A new reactor capable of N₂O abatement and including a selective catalyst (SCR) for NO_x abatement will be installed. The gases coming from the new 10-R-204 abatement unit would exit at **a minimum temperature of 550°C**. As part of this alternative, the boiler 10-BO-155 located downstream of the chiller will be removed.

See flow chart on sheet 3

Opción 2:

A) Increase the diameter of the existing by-pass of the 10-BO-156 boiler to achieve abatement inlet temperatures up to 550°C (operating range 480°C-550°C, depending on the temperature jump in the abatement based on the NO_x-NO₂ gas content).

B) Incorporate a 10-R-204 abatement reactor (SCR+ N₂O).

C) In-line heater (without compressors) for the purpose of increasing tail gas temperature.

D) Elimination of boiler 10-BO-155.


The tail gases coming from the 10-E-151 exchanger (reaction gas vs. tail gas) enter the 10-BO-156 equipment at a temperature of 550°C and are cooled in this reboiler up to 480°C (maximum temperature reached of 485°C with the existing by-pass completely open). In this option, the reboiler will be maintained, but it will be necessary to increase the existing by-pass in order to reach up to 550°C inlet to the 10-R-204.

A new reactor capable of N₂O abatement and including a selective catalyst (SCR) for NO_x abatement will be installed. The gases coming from the new abatement 10-R-204 would come out at **a minimum temperature of 550°C**.

Subsequently, an in-line burner with gas injection will be incorporated (contestants should evaluate whether it is necessary to add air or whether the excess O₂ from the process is sufficient to initiate the methane-O₂ reaction and maintain it). Specify if there is a minimum percentage of O₂ for the combustion to be viable. The objective is to increase the temperature of the gases to operate in a temperature range between 580-620°C inlet to the 10-TB-002 expander (maximum temperature 640°C).

The elimination of the 10-BO-155 reboiler is considered with the objective of operating at a temperature between 580°C-620°C inlet to the expander.

See flow chart on sheet 3.

 Austin Powder Argentina S.A. División Petroquímica	N₂O ABATMENT Design alternatives			ANEXO-006- Project Options
	Classification D	Review: 0 Date: 28/02/25	Next review:- Date: -	Page 2 de 3

Opción 3:

- A) Increase the diameter of the existing by-pass of the 10-BO-156 boiler to achieve abatement inlet temperatures up to 550°C (operating range 480°C-550°C, depending on the temperature jump in the abatement based on the NO_x-NO₂ gas content).
- B) Incorporate a 10-R-204 abatement reactor (SCR+ N₂O).
- C) Reuse of the existing 10-R-203 (NSCR) abatement unit to increase the tail gas temperature.
- D) Remove the boiler 10-BO-155 (optional).

The tail gases coming from the 10-E-151 exchanger (reaction gas vs. tail gas) enter the 10-BO-156 equipment at a temperature of 550°C and are cooled in this reboiler up to 480°C (maximum temperature reached of 485°C with the existing by-pass completely open). In this option, the reboiler will be maintained, but it will be necessary to increase the existing by-pass to reach up to 550°C inlet to the chiller. A new reactor capable of N₂O abatement and including a selective catalyst (SCR) for NO_x abatement will also be installed. The gases from the new

10-R-204 fan would come out at a minimum temperature of 550°C.

Consideration is given to keeping the current 10-R-203 (NSCR) gas cooler on line in order to increase the tail gas temperature to operate in the range of 580°C-620°C inlet to the expander (maximum temperature 640°C).

The elimination of the 10-BO-155 boiler is optional in this alternative and will be evaluated by each bidder. The addition of an equipment by-pass can be contemplated if necessary.

See flow chart on sheet 3.

Notes valid for all 3 options:

Note 1: It is possible to evaluate (fr any of the options) the possibility of reusing the current 10-V-255 Mixer, either in its current location (before the chiller) or for the heating system, at the discretion and verification of each contestant.

Note 2: Explain in detail what happens to the catalyst when working at temperatures higher than 550°C.

Note 3: The offeror shall provide a method of ammonia exhaust control downstream of the SCR to prevent the formation of ammonium nitrate or ammonium nitrite in the turboexpander and downstream of the turboexpander. This may be a catalytic bed to ensure destruction of unreacted ammonia, or control loop to regulate injection or other method deemed effective by the offeror.



Austin Powder Argentina S.A.
División Petroquímica

N2O ABATMENT Design alternatives

ANNEX-006- Project Options

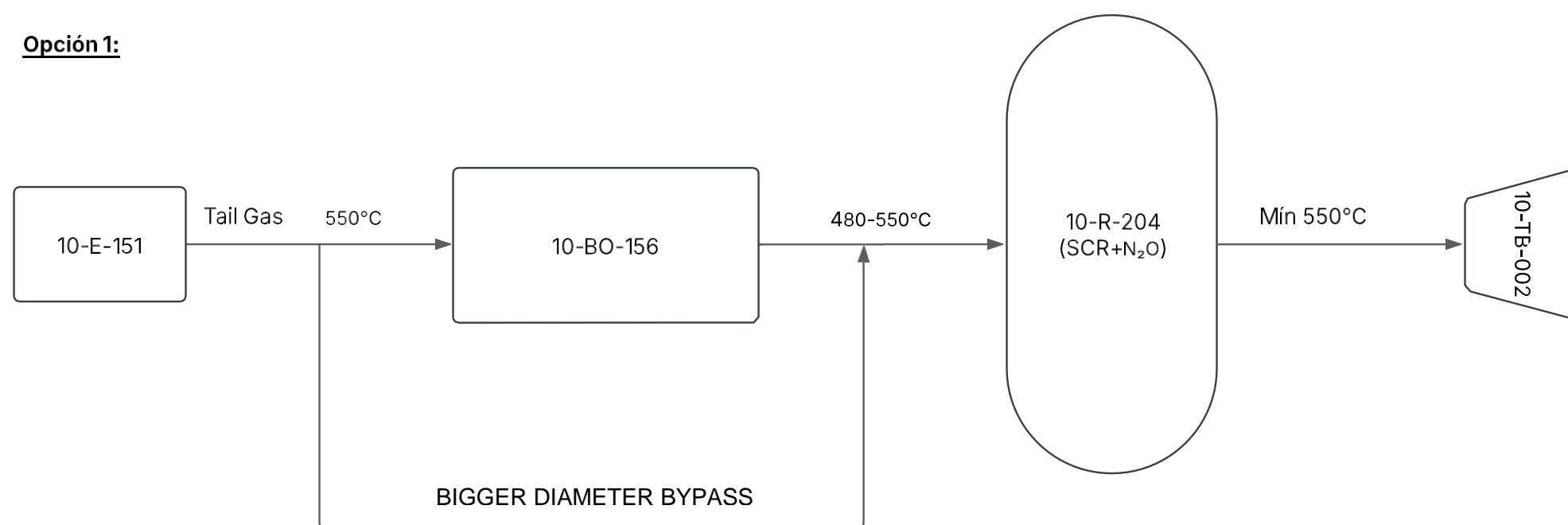
Classification: D

Revision: 0
Date: 28/02/25

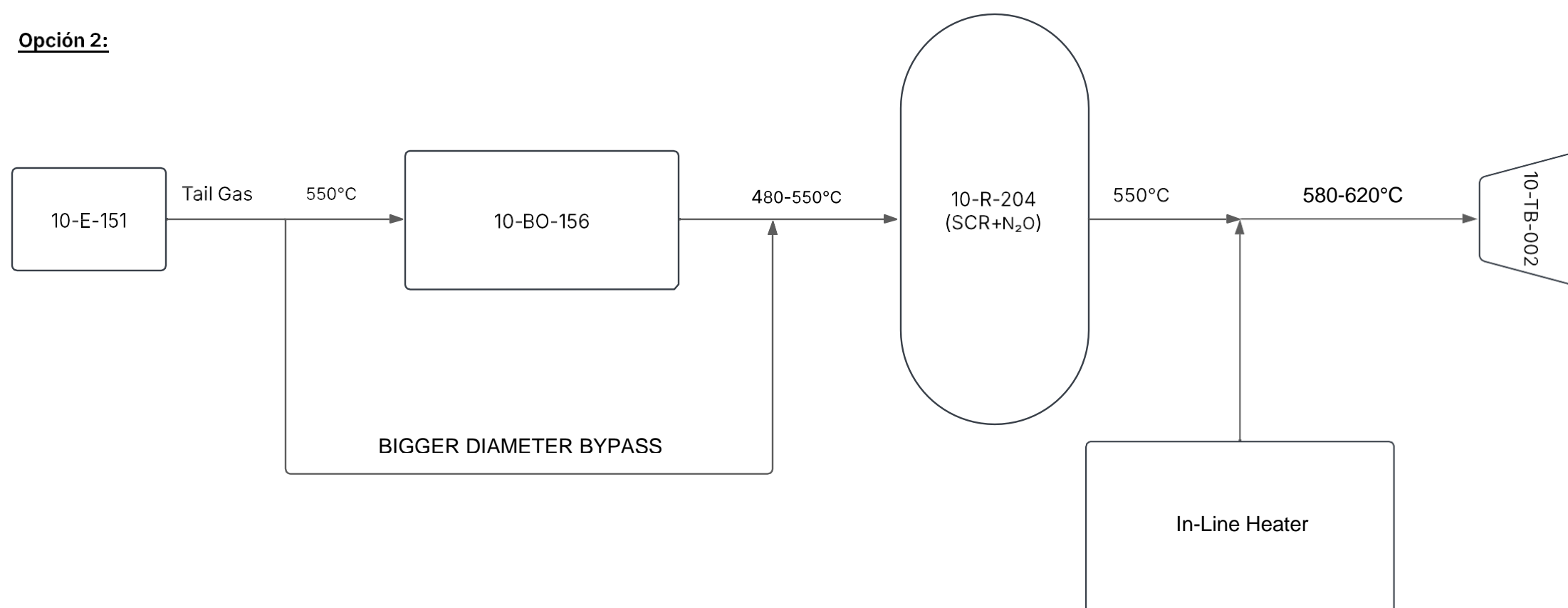
Next revision: -
Date: -

Page: 3 de 3

Opción 1:



Opción 2:



Opción 3:

