

**ENGINEERING EVALUATION  
CONOCOPHILLIPS SAN FRANCISCO REFINERY; PLANT 16  
APPLICATION 9060**

**BACKGROUND**

**Process Description**

ConocoPhillips has applied to increase the existing throughput limits for the S-307 Unicracker (Unit 240) and the S-308 Reformer (Unit 244). This throughput increase is necessary because proposed modifications at S-307 will result in approximately 10% greater throughput capacity at S-307 and S-308.

S-307 processes gas oil streams into various saleable and intermediate products. S-307 includes a dedicated hydrogen plant and 3 separate processing steps: pre-fractionation, uncracking and fractionation. Intermediate products from S-307 may be used as blendstocks for diesel and gasoline fuels or may be further processed at S-308 or S-309.

S-308 is directly downstream of S-307. The S-309 "Unisar" (Unit 248) is also downstream of S-307, in parallel with S-308. While S-308 produces gasoline blendstocks, S-309 produces diesel and jet fuel blendstocks. ConocoPhillips has not proposed changes to the daily or annual throughput limits at S-309.

Throughput at S-307 and S-308 is limited by Permit Condition 20989 (copy attached), which was imposed as part of the facility Title V permit, as well as Table II-A of the permit (copy attached):

source	daily limit (bbl/day)  (Title V, Table II-A)	proposed daily limit	annual limit (bbl/yr)  (Title V, Condition 20989)	proposed annual throughput limit
S-307	38,000	42,000	13,900,000	15,330,000
*S-308	16,087	no change	5,110,000	5,870,000

The asterisk indicates that S-308 is designated a "grandfathered" source, for which the annual throughput limit is not federally enforceable. Also, daily throughput limits are not federally enforceable.

**Modifications**

Modifications will be made to various existing support equipment at S-307. No new sources or support equipment will be added. The proposed changes are:

- replace various S-307 feed pump impellers and motors
- upgrade S-307 hydrogen plant compressor
- modify or replace internals of several S-307 heat exchangers
- re-tray S-307 fractionation de-butanizer column

**EMISSIONS****Upstream Sources**

A simplified flowchart is provided in the application. The only sources which provide feed to S-307 are the S-300 crude/coker unit and the S-350 crude unit. Both of these units have existing annual throughput limits which will remain in effect (Condition 383, Part 2 for S-350; Condition 21092, Part 1 for S-300). No changes have been proposed to these limits. Thus, these upstream sources are not considered to be modified. However, it should be noted that the throughput limit at S-300 was recently increased in Application 5814. S-307 and S-308 were not identified as modified sources in Application 5814 because these sources were bottlenecked. The proposed changes in this application will remove that bottleneck and S-307 and S-308 are considered to be modified in this application. Emissions from S-307 and S-308 are considered below ("Fugitive Emissions").

**Downstream Sources**

As discussed above, S-309 is downstream of S-307. S-309 is subject to daily and annual throughput limits (Title V, Table II-A and Permit Condition 20989) that will remain in effect and S-309 is not considered to be modified or to have an emission increase.

The S-318 gasoline/diesel blending facility is downstream of both S-308 and S-309. S-318 is subject to daily and annual throughput limits (Title V, Table II-A and Permit Condition 20989) that will remain in effect and S-318 is not considered to be modified or to have an emission increase.

**Heaters**

There are 15 heaters associated with S-307 and S-308. Each of these has an existing firing capacity and daily firing limit in Permit Condition 1694, as well as annual firing limits in either Permit Condition 1694 or Permit Condition 20989. Thus, these heaters will not be considered to be modified and no emission increase will be quantified for these sources.

**Tanks**

ConocoPhillips has identified 5 tanks associated with S-307 which are expected to experience increases in throughput as a result of the proposed modifications to S-307 and resulting throughput increase at S-307. However, none of these tanks will be physically modified and each tank has an annual throughput limit in Permit Condition 20989 that will remain in effect. Further, none of these tanks was ever issued an Authority to Construct. Therefore, in accordance with Regulation 2-1-234, these tanks are not considered to be modified and no emission increase will be quantified. [Note: Because each tank has a permit condition limiting throughput and because no tank was issued an Authority to Construct, 2-1-234.1, 234.2 and 234.3 are not applicable.

Because none of these tanks will experience a change of service, no compounds will be emitted which were previously not emitted and 2-1-234.4 is not applicable. Thus, a modification has not occurred.]

### **Fugitive Emissions**

Emissions at process units like S-307 and S-308 are generally limited to emissions of organics from related fugitive emission sources (since heaters are permitted as separate sources). ConocoPhillips has indicated that no new fugitive components will be added and that no fugitive component will change service in order to realize the proposed throughput increases. Thus, no emission increase will be quantified at S-307 or S-308.

### **PLANT CUMULATIVE INCREASE**

No emission increase is permitted in this application. There is not change to the facility cumulative increase.

### **TOXIC RISK SCREENING ANALYSIS**

No emission increase is permitted in this application.

### **STATEMENT OF COMPLIANCE**

#### **Applicable Regulations**

S-307 and S-308 will continue to be subject to the same regulatory requirements specified in Table IV-AA and Table IV-N of the facility Title V permit.

#### **Other Requirements**

This application is considered to be ministerial under the District's CEQA guidelines (Regulation 2-1-311) and therefore is not subject to CEQA review. The engineering review for this project requires only the application of standard permit conditions and standard emission factors in accordance with Permit Handbook Chapter 3.4.

Because no additional emissions are permitted, the public notification requirements of Regulation 2-1-412 are not applicable.

Applicable federal requirements for S-307 and S-308 are identified in Table IV-AA and Table IV-N of the facility Title V permit. S-307 and S-308 are subject to MACT Subpart UUU because they are catalytic cracking and reforming units, respectively. No additional federal requirement is triggered by the proposed modifications and throughput increases.

**BACT and Offsets**

BACT and offset requirements are not triggered because no emission increase is permitted in this application.

**PERMIT CONDITIONS**

A minor permit revision will be submitted to U.S. EPA to make the following change to Table II-A of the facility Title V permit.

307	U240 Unicracking Unit	NA	NA	<del>4238</del> ,000 bbl/day
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Also, a minor permit revision will be submitted to U.S. EPA to make the following changes to annual throughput limits in Permit Condition 20989:

307	Table II-A	<del>1.5331</del> E 7 bbl
*308	Table II-A	<del>5.875</del> E 6 bbl

**RECOMMENDATION**

Issue an Authority to Construct to ConocoPhillips for:

- S-307 Unit 240 Unicracker: Increase capacity by replacing or modifying feed pump impellers and motors, upgrading hydrogen plant compressor, replacing or modifying heat exchanger internals, re-traying fractionation de-butanizer column; 1.533 E 7 bbl/yr modified capacity
- S-308 Unit 244 Reformer: Increase permitted throughput; 5.87 E 6 bbl/yr modified capacity

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