

Environmental Noise Assessment

CVL03215 West Hills College AT&T Cellular Facility

Coalinga, California

BAC Job # 2019-192

Prepared For:

Complete Wireless Consulting

Attn: Kristin Crandell
2009 V Street
Sacramento, CA 95818

Prepared By:

Bollard Acoustical Consultants, Inc.



Dario Gotchet, Consultant

September 24, 2019



Introduction

The CVL03215 West Hills College AT&T Wireless Unmanned Telecommunications Facility (project) proposes the installation of cellular equipment within a lease area located at 117 Truman Street in Coalinga, California (APN: 071-134-18). The externally mounted HVAC unit of a pre-manufactured concrete walk-in cabinet and an emergency diesel standby generator have been identified as the primary noise sources associated with the project. Please see Figure 1 for the project overall site plan. The studied site design is dated August 29, 2019.

Bollard Acoustical Consultants, Inc. has been contracted by Complete Wireless Consulting, Inc. to complete an environmental noise assessment regarding the proposed project cellular equipment operations. Specifically, the following assessment addresses daily noise production and exposure associated with operation of the project emergency generator and HVAC equipment.

Please refer to Appendix A for definitions of acoustical terminology used in this report. Appendix B illustrates common noise levels associated with various sources.

Criteria for Acceptable Noise Exposure

City of Coalinga General Plan 2025

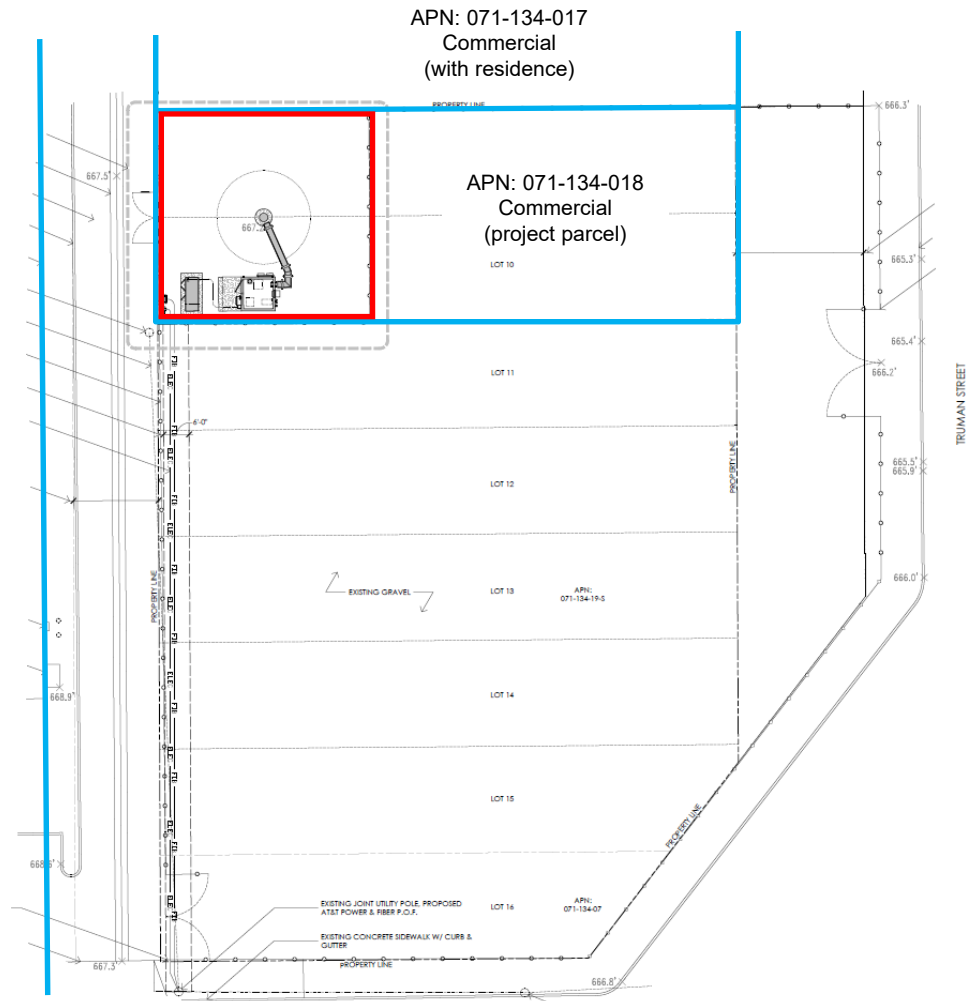
The Safety, Air Quality and Noise Element (Chapter 5) of the City of Coalinga General Plan 2025 identifies goals and policies to protect the residents of the city from the harmful effects of exposure to excessive noise. Specifically, Table 5-6 of Chapter 5 establishes land use compatibility guidelines for various community noise environments determined by land use.

According to the City of Coalinga Zoning Map (dated January, 2015), the project parcel and adjacent parcels are commercially zoned. However, the adjacent commercially zoned parcel to the north contains a single-family residence. As a result, the General Plan noise level criteria applicable to commercial and single-family residential land uses would be applicable to the project. The General Plan noise level limits applicable to the project have been reproduced below in Table 1.



Table 1
Acceptable Noise Levels by Land Use

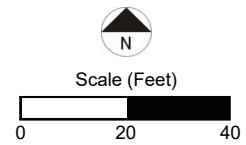
Category	CNEL or L _{dn} , dBA	
	Residential	Commercial
Normally Acceptable	55 or less	60 or less
Conditionally Acceptable	55 to 60	60 to 70
Normally Unacceptable	65 to 70	Above 70
Clearly Unacceptable	Above 70	--

Source: City of Coalinga General Plan 2025, Safety, Air Quality and Noise Element, Table 5-6



Legend

-  Proposed AT&T Cellular Facility Lease Area
-  Parcel Boundaries (Approximate)



**CVL03215 West Hills College
AT&T Cellular Facility
Coalinga, California**

Proposed Project Overall Site Plan

Figure 1



City of Coalinga Municipal Code

Section 9-5.125 of the City of Coaling Municipal Code provides noise criteria specifically applicable to wireless telecommunications facilities, which is reproduced below.

Section 9-5.125 – Telecommunications facilities.

- j) Operation and maintenance. All commercial wireless services and facilities shall comply at all times with the following operation and maintenance standards:
 - 4. Each facility shall be operated in such a manner so as to minimize any possible disruption caused by noise. Backup generators shall only be operated during periods of power outages, and shall not be tested on weekends or holidays, or between the hours of 7:00 p.m. and 7:00 a.m. on weekday nights. All equipment, such as backup generators and air conditioners, shall be designed to be in compliance with Section 9-4.405.

Project Noise Generation

As discussed previously, there are two project noise sources which are considered in this evaluation; the externally mounted HVAC unit of the pre-manufactured concrete walk-in cabinet and the emergency diesel generator. The evaluation of potential noise impacts associated with the operation of each noise source is evaluated separately as follows:

HVAC Equipment Noise Source and Reference Noise Level

The project proposes the installation of a pre-manufactured concrete walk-in cabinet equipped with one (1) externally mounted HVAC unit within the equipment lease area illustrated on Figure 1. According to the project applicant, the HVAC unit proposed for the project is a Marvair Airxcel, Inc. Model ECUA18ACA. Based on reference noise level data obtained from the manufacturer (Marvair Airxcel, Inc.), this specific HVAC unit model has a reference noise level of 62 dB at a distance of 5 feet. The manufacturer's noise level data specification sheet for the proposed HVAC equipment is provided as Appendix C.

Generator Noise Source and Reference Noise Level

The project also proposes the installation of an emergency standby diesel generator within the lease area to maintain cellular service during emergency power outages. Based on the project site plans, a Generac Industrial Power Systems Model SD030 is proposed at this site. It is assumed that the proposed generator will be equipped with the Level 2 Acoustic Enclosure resulting in a reference noise level of 68 dB at a distance of 23 feet. The manufacturer's noise level data specification sheet for the proposed generator and acoustical enclosure is provided as Appendix D.

According to the project applicant, the emergency generator would be tested for routine maintenance twice per month for a duration of approximately 15 minutes during daytime hours only. It is expected that nighttime operation of the project emergency generator would be exempt from the city's exterior noise exposure criteria due to the need for continuous cellular service

provided by the project equipment. For the purposes of this analysis, the generator was conservatively assumed to be operating continuously for a one hour period during daytime hours.

Predicted Facility Noise Levels at the Nearest Property Lines

Assessment Relative to the General Plan Noise Criteria

The proposed project equipment maintains various distances from the nearest property lines. Those distances were scaled using the provided site plans dated August 29, 2019. Assuming standard spherical spreading loss (-6 dB per doubling of distance), project-equipment noise exposure at the nearest property lines was calculated and the results of those calculations are presented in Table 2.

In order to calculate project-related noise generation relative to the General Plan L_{dn} noise level descriptor, the number of hours the equipment is in operation must be known. For the purpose of this analysis, the HVAC unit of the pre-manufactured concrete walk-in cabinet was conservatively assumed to be operating continuously for 24 hours. As mentioned previously, the project applicant has indicated that routine testing and maintenance of the emergency generator is limited to daytime hours, twice per month, for a duration of less than 15 minutes. As a result, the assumption of one hour of generator operation during daytime hours is considered conservative.

According to the project site plans, the externally mounted HVAC unit is proposed to be located on the east side of the pre-manufactured concrete walk-in cabinet. At this location, the HVAC equipment would be side-faced relative to the parcel to the north (APN: 071-134-017), and screened from view of the parcel to the west (APN: 071-113-426) by the intervening proposed cabinet structure. To account for the off-axis directionality (side-facing) of the equipment, an offset of -5 dB was applied to predicted HVAC unit noise levels at the property line of APN: 017-134-017 to the north. Similarly, an offset of -5 dB was also applied to predicted HVAC equipment noise levels at the property line of APN: 071-113-426 to the west to account for the screening provided by the proposed cabinet that would break line of sight. No offsets were applied to predicted generator noise levels at the nearest property lines.

**Table 2
Summary of Predicted Project Equipment Noise Exposure at Nearest Property Lines**

APN ¹	Distance from Equipment (feet) ²		Predicted Equipment Noise Level, L _{dn} (dB)			Applicable City Noise Standard
	HVAC	Generator	HVAC ^{3,4}	Generator ⁵	Combined	
071-134-017	45	40	44	49	51	55
071-113-426	25	12	49	60	60	60

¹ Parcel boundaries are shown on Figure 1.

² Distances from proposed equipment to the nearest property line were scaled using the provided site plans.

³ An offset of -5 dB was applied to predicted HVAC unit noise levels to account for the off-axis directionality of the equipment (APN: 071-134-017) and screening provided by the proposed cabinet (APN: 071-113-426), as discussed in this report.

⁴ HVAC unit L_{dn} was calculated by conservatively assuming 24 continuous hours of operation.

⁵ Generator L_{dn} was calculated by conservatively assuming 1 hour of daytime operation for testing and maintenance during daytime hours.

The adjacent parcel to the north (APN: 071-134-017) is commercially zoned but contains a residence. As a result, the City of Coalinga General Plan normally acceptable noise standard of 55 dB L_{dn} for single-family residential uses was conservatively applied at this property. The adjacent parcel to the west (APN: 071-113-426) is commercially zoned with no residential uses. Therefore, the General Plan normally acceptable noise standard of 60 dB L_{dn} for commercial uses was applied at this property.

As indicated in Table 2, the predicted combined project equipment noise level of 51 dB L_{dn} at the property line of APN: 071-134-017 would satisfy the City of Coalinga General Plan 55 dB L_{dn} noise level limit applicable to single-family residential uses. The Table 2 data also indicates that the predicted combined project equipment noise level of 60 dB L_{dn} at the property line of APN: 071-113-426 would satisfy the General Plan 60 dB L_{dn} noise level limit applicable to commercial uses. As a result, no further consideration of project equipment noise mitigation measures would be warranted for the project relative to the General Plan noise level criteria.

Assessment Relative to the Municipal Code Noise Criteria

Section 9-5.125(j)(4) of the City of Coalinga Municipal Code states that backup generators shall only be operated during periods of power outages, and shall not be tested on weekends or holidays, or between the hours of 7:00 p.m. and 7:00 a.m. on weekday nights. It is our understanding that the generator which is proposed at this site would only operate during emergencies (power outages) and brief daytime periods for periodic maintenance/lubrication. In addition, testing of the generator would occur twice per month on weekdays only, during daytime hours, for a duration of approximately 15 minutes. The emergency generator would not operate at night, except during power outages. Based on this information, the proposed project emergency generator would be in compliance with Section 9-5.125(j)(4), and no further generator mitigation measures would be warranted for the project relative to the City of Coalinga Municipal Code.

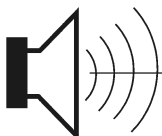
Conclusions

Based on the equipment noise level data and analyses presented above, project-related equipment noise exposure is predicted to satisfy the applicable City of Coalinga General Plan and Municipal Code noise criteria at the closest property lines. As a result, no additional noise mitigation measures would be warranted for this project.

This concludes our environmental noise assessment for the proposed CVL03215 West Hills College AT&T Cellular Facility in Coalinga, California. Please contact BAC at (916) 663-0500 or darioq@bacnoise.com with any questions or requests for additional information.

Appendix A Acoustical Terminology

Acoustics	The science of sound.
Ambient Noise	The distinctive acoustical characteristics of a given space consisting of all noise sources audible at that location. In many cases, the term ambient is used to describe an existing or pre-project condition such as the setting in an environmental noise study.
Attenuation	The reduction of an acoustic signal.
A-Weighting	A frequency-response adjustment of a sound level meter that conditions the output signal to approximate human response.
Decibel or dB	Fundamental unit of sound, A Bell is defined as the logarithm of the ratio of the sound pressure squared over the reference pressure squared. A Decibel is one-tenth of a Bell.
CNEL	Community Noise Equivalent Level. Defined as the 24-hour average noise level with noise occurring during evening hours (7 - 10 p.m.) weighted by a factor of three and nighttime hours weighted by a factor of 10 prior to averaging.
Frequency	The measure of the rapidity of alterations of a periodic signal, expressed in cycles per second or hertz.
L_{dn}	Day/Night Average Sound Level. Similar to CNEL but with no evening weighting.
Leq	Equivalent or energy-averaged sound level.
L_{max}	The highest root-mean-square (RMS) sound level measured over a given period of time.
Loudness	A subjective term for the sensation of the magnitude of sound.
Masking	The amount (or the process) by which the threshold of audibility is for one sound is raised by the presence of another (masking) sound.
Noise	Unwanted sound.
Peak Noise	The level corresponding to the highest (not RMS) sound pressure measured over a given period of time. This term is often confused with the Maximum level, which is the highest RMS level.
RT₆₀	The time it takes reverberant sound to decay by 60 dB once the source has been removed.
Sabin	The unit of sound absorption. One square foot of material absorbing 100% of incident sound has an absorption of 1 sabin.
SEL	A rating, in decibels, of a discrete event, such as an aircraft flyover or train passby, that compresses the total sound energy of the event into a 1-s time period.
Threshold of Hearing	The lowest sound that can be perceived by the human auditory system, generally considered to be 0 dB for persons with perfect hearing.
Threshold of Pain	Approximately 120 dB above the threshold of hearing.

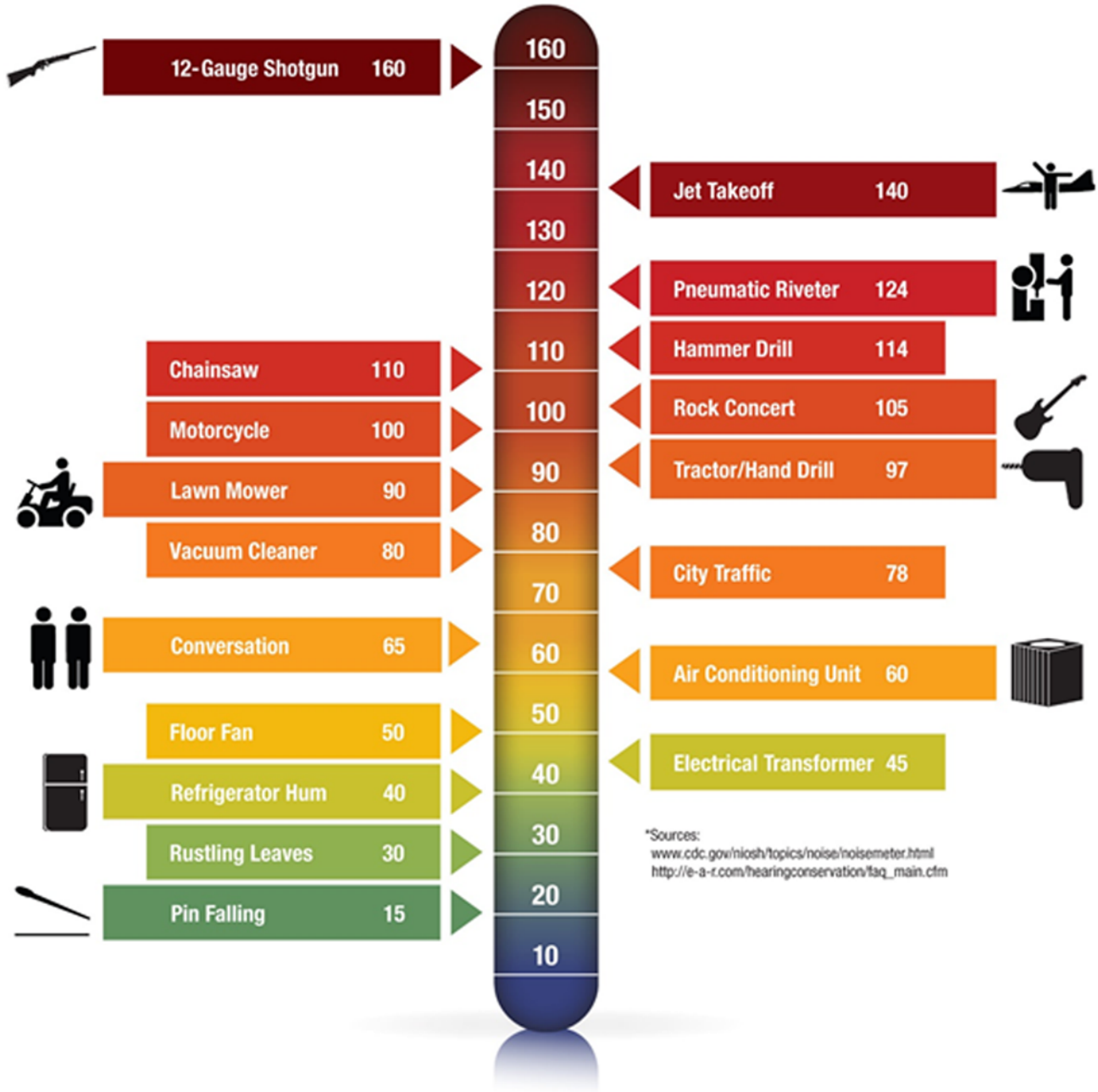


B O L L A R D

Acoustical Consultants

Appendix B

Typical A-Weighted Sound Levels of Common Noise Sources Decibel Scale (dBA)*



*Sources:
www.cdc.gov/niosh/topics/noise/noisemeter.html
http://e-a-r.com/hearingconservation/faq_main.cfm

Appendix C

Marvair

156 Seedling Drive
Cordele, Georgia 31015
229-273-0753

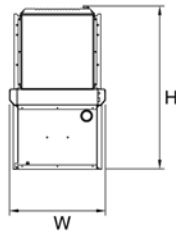
Sound Pressure Level for the Industrial Product Air Conditioners (dBA)						
Distance From Unit (Feet)	Model Number					
	ECUA06ACA	ECUA08ACA	ECUA012ACA	ECUA018ACA		
5			51.5	62		
10			50.7	58		
20			47.8	55		
30			46.5	51		
40			45.6			
50			45.6			
60						
70						
80						

- Notes: (1) Date: July 1, 2019
(2) Background Sound Pressure Level: 41 dBA
(3) Sound Level Meter 1 Meter Above Ground Directly in Line with Outdoor Coil
(4) All units - 410A Refrigerant

Appendix D

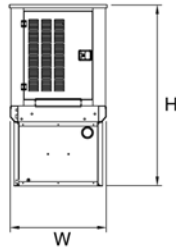
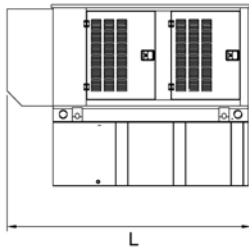
SD030

dimensions, weights and sound levels



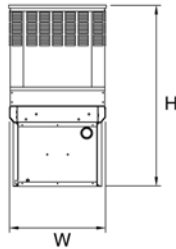
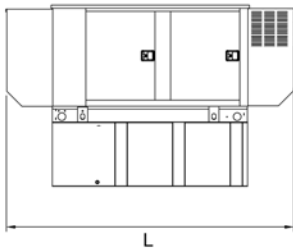
OPEN SET

RUN TIME HOURS	USABLE CAPACITY (GAL)	L	W	H	WT	dBa*
NO TANK	-	76	38	46	2060	82
20	54	76	38	59	2540	
48	132	76	38	71	2770	
77	211	76	38	83	2979	
109	300	93	38	87	3042	



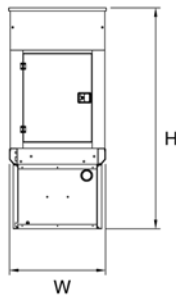
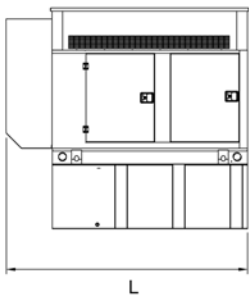
STANDARD ENCLOSURE

RUN TIME HOURS	USABLE CAPACITY (GAL)	L	W	H	WT	dBa*
NO TANK	-	95	38	50	2362	77
20	54	95	38	63	2842	
48	132	95	38	75	3072	
77	211	95	38	87	3281	
109	300	95	38	91	3344	



LEVEL 1 ACOUSTIC ENCLOSURE

RUN TIME HOURS	USABLE CAPACITY (GAL)	L	W	H	WT	dBa*
NO TANK	-	113	38	50	2515	70
20	54	113	38	63	2995	
48	132	113	38	75	3225	
77	211	113	38	87	3434	
109	300	113	38	91	3497	



LEVEL 2 ACOUSTIC ENCLOSURE

RUN TIME HOURS	USABLE CAPACITY (GAL)	L	W	H	WT	dBa*
NO TANK	-	95	38	62	2520	68
20	54	95	38	75	3000	
48	132	95	38	87	3230	
77	211	95	38	99	3439	
109	300	95	38	103	3502	

*All measurements are approximate and for estimation purposes only. Weights are without fuel in tank. Sound levels measured at 23ft (7m) and does not account for ambient site conditions.

- Tank Options**
- MDEQ OPT
 - Florida DERM/DEP OPT
 - Chicago Fire Code OPT
 - IFC Certification CALL
 - ULC CALL

Other Custom Options Available from your Generac Industrial Power Dealer

YOUR FACTORY RECOGNIZED GENERAC INDUSTRIAL DEALER

Specification characteristics may change without notice. Dimensions and weights are for preliminary purposes only. Please consult a Generac Power Systems Industrial Dealer for detailed installation drawings.