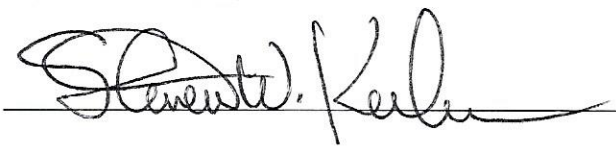
2023 Ak-Chin Indian Community Grant Application Cover Sheet

Name of Applicant: REGIONAL FIRE & RESCUE DEPT. Inc. Applicant is a: □ City/Town/County (circle) x Other Non-Profit Public Charity
Mayor/Supervisor/Chairman/President: Steven W. Kerber, FO1, CFEI, HMT (Founder, President/CEO)
Contact Person and Title: Steven W. Kerber, Fire Chief/Paramedic
Applicant Address (administrative office): 7951 W. McCartney Road
City: Casa Grande, AZ Zip Code: 85194-7417
Applicant Mailing Address (if different): Same
City: Zip Code:
Phone Number: (520) 723-4680 Fax Number: (520) 723-4681
E-mail Address: steven.kerber@regionalfire.org
Fiscal Agent for any Applicant that is not a City, Town, or County *(Special Taxing Districts/Fire Districts must have a Fiscal Agent)*
Contact Person: Ms. Heather Patel, GPC Office of Budget and Finance
City/Town/County Mailing Address: P.O. Box 1348
City: Florence, AZ Zip Code: 85132
Phone Number: (520) 866-6422 Fax Number: (Not Provided)
E-mail Address: heather.patel@pinal.gov

Program or Project Name: FIRE/RESCUE EQUIPMENT SUPPORT
Purpose (Check all that apply) ☐ education **x public safety** ☐ health ☐ environment ☐ promotion of commerce ☐ economic and community development
Purpose of Grant (brief statement): Regional Fire & Rescue is seeking support to purchase Firefighting
and Rescue Equipment to include the purchase of (18) refurbished Self-Contained Breathing Apparatus
(SCBAs), an Eco CAFS Self Contained CAFS Unit for a Command Vehicle, along with Firefighting Nozzles,
Supply Hoses, attack hoses, intake valve, Atmospheric Gas Meter and a Replacement Tactical Drone.
Beginning and Ending Date of Program or Project: January 1, 2024 to December 31, 2024
Amount Requested: $134,500.00 Total Cost: $134,473.74
Geographic Area Served: Unincorporated Pinal County, S. of Coolidge, N. of Eloy and Surrounding CG

By the execution of this Grant Application the undersigned agrees that the information contained in this Application is true, to the best of the Applicant's knowledge. The Applicant shall notify the Community if any information in this Application changes.

Signature:
For the Applicant:  Date: 5/7/2023

Typed/Printed Name and Title: Steven W. Kerber, Founder, Fire Chief/Paramedic

For the Fiscal Agent: _____ Date: _____
(If applicable)
Typed/Printed Name and Title: _____

REGIONAL FIRE & RESCUE DEPARTMENT

~ Grant Proposal ~

A. Purpose of Grant -

1. Proposed program or project:

Regional Fire & Rescue Department is seeking assistance with the purchase of urgently needed firefighting and rescue equipment detailed below. With your previous grant assistance in FY-2019 ($160,000) we purchased a slightly used chassis with only 9,000 miles on it and built a brand new structural fire pumper with a large capacity tank (1,500 gallons) through Missouri Fire Apparatus. We combined funds from the sale of an older 2,000 gallon water tender ($39,000) in order to purchase on completion, a 2010 International fire pumper that was delivered in January 2021 at a cost of $196,000.00. We are very appreciative of the Ak-Chin Community for this assistance and trust you will give this proposal the utmost consideration.

In the past couple of years, we have attempted to purchase a majority of the needs within this request through FEMA under the Assistance to Firefighters (AFG) Grants, however we have not been successful. We have an urgent need for replacement of 16 year old Breathing Apparatus for our Firefighters. Our SCBA were manufactured under NFPA 2002 standards, purchased in 2007 and are 16 years old. They are presenting issues related to maintenance and reliability due to their age, wear and rusting of internal components in the second stage regulator. As an alternative to purchasing new for their replacement, we are choosing refurbished/reconditioned SCBAs built to NFPA 2013 standards with new bottle, new mask and new harnesses attached to the frames for half the cost of new SCBA. Each unit will cost $3,750.00 each and for (18) SCBA $67,500.00 is required.

Our additional needs include the purchase of a 60 Gallon Self-Contained Compressed Air Foam Unit for installation in a Command Vehicle. 60 gallons of foam and water with compressed air will provide 600 gallons of finished firefighting foam concentration. Additional needs include replacement Supply Hose and attack line hoses for both of our fire engines. We currently carry 1,000 feet of LDH supply line on two apparatus that is 17 year old hose that has exceeded its useable life span. We need to replace an automatic Nozzle on a bumper mounted turret to a larger GPM size, and also replace all Firefighting Nozzles on all of our pre-connected attack lines on three apparatus. We also are in need of a replacement atmospheric gas meter to replace a 15 year old MSA Sirus gas meter of which the meter is no longer supported for maintenance, calibration and new gas sensors, required to keep the unit reliable/operational.

Chief Martinez leads the "Air Division" of which there are three FAA licensed (Part 107) Drone Pilots in our organization. The Air Division Chief is the lead pilot and holds an FAA Commercial Pilot certificate. We have hosted three multi-agency trainings in preparation for each enrolled candidate to take their FAA Part 107 UAS Drone Pilot Licensing exam. The drone program has been in place since 2019 utilizing the Division Chiefs personally owned DJI Mavic Matrice Drone and (2) DJI "Inspire" Drones. After 4 years of successful operation, we wish to purchase a Public Safety drone of our own for Regional Fire. This would be a DJI M30T that is designed for Public Safety as it has longer battery life in flight, both Color and Infra-Red (Night Vision) cameras that are accessible simultaneously. This drone complete with controllers, batteries and sales tax will cost $15,835.00. The total costs of all these items is **$134,500.00** please see the spreadsheet in attachment to this request under additional information.

2. Target Population:

Regional Fire & Rescue serves the unincorporated areas of Central Pinal County and provides public service fire suppression & rescue services to over 8,000 residents and businesses in the County. During winter months, that number can swell to as many as 12,000 with the populations of three of the area RV Parks in the Casa Grande Valley. We serve all residents and motorists regardless of Subscription status and receive no taxes or endowments in support of our operation. We began applying to the tribal communities for grant assistance in 2014, in hopes of funding specific fire/rescue apparatus, and equipment needs.

As a non-profit, public charitable organization we are cooperating in this request with local government (Pinal County) as a Grant-in-aid/Fiscal Agent, required for eligibility in your invitation. Operating without tax-funding or assured financial support in our budget, makes planned purchases and scheduled maintenance, repairs and upkeep to our facility more difficult without a steady funding base for our organization. All of our maintenance, repairs, equipment purchases and replacements must be funded by Grants as our daily operational expenses are barely covered by what Subscription funds we receive from local residents. Currently and rather consistently, our Subscription support from the community we serve has been approx. 21%. We have 744 residential subscribers out of an estimated 3,500 potential residences in our response area.

3. Project Goals and Objectives:

Our goal is to obtain the firefighting equipment necessary to keep our Firefighters safe in dangerous conditions that involve immanently dangerous to life and health (IDLH) atmospheres. The age of our SCBA is three NFPA cycles old and are considered obsolete for firefighting use (after 10 years). They are in need of rebuilding and repairs if we were to keep using them, in order to comply with OSHA/ADOSH requirements, however repair and continued use of these old SCBA are not feasible and must be replaced.

We carry Four SCBA on three apparatus, (Engine-586, Engine-587, Tender-586) and Two on Squad-586 and One on the Chief's Command unit. This leaves three spare SCBA for spares, swap outs, training, etc., for a total of (18).

The replacement of firefighting hoses, nozzles, gas meter and the purchase of a Drone assists our Firefighters specifically with our daily operations. Safety is our utmost priority for our personnel. Operating with expired or obsolete equipment provides room for failure or tragedy and can cause injury, illness or death if our Firefighters are not adequately protected.

Firefighting Hoses are not to be relied upon much longer than 10-15 years despite annual hose pressure testing. These hoses are exceeding 17 years (purchased with a FEMA Grant in 2007). Every aspect of the performance of a Firefighter engaged in his duties and in relation to his or her personal safety, requires reliable equipment to keep them safe, with reliable firefighting and rescue equipment to help them achieve their tasks in protecting lives, property and the environment.

4. Timetable:

Once we receive approval of our grant and learn of our selection for funding, we will most of all of the equipment as listed in the estimate from the vendor United Fire Equipment. Gresco Tech is the vendor providing the DJI Drone M30T. Eco CAF is providing the self-contained CAFS system for the new Command Vehicle. All of these items are dependent on the supply chain from manufacturers and vendors however we should have no issues with completing these purchases and acquiring the equipment within the period of the grant. These items will be ordered as soon as funds are available. It is anticipated that all funds would be expended in the first Six to Eight months.

B. Resources:

1. There are no other funding resources.
2. There are no other organizations or partners contributing to this project.
3. This is a New Project that of replacing obsolete Firefighting Equipment.
4. There have been no requests to other tribes at this time for this project.
   a. There have been no requests for this project within the last 18 months.

B. Resources - Continued:

b. Funding requests made in the past five years, include:

October 17th 2018 the Gila River Indian Community awarded ($205,132) toward Phase-II construction of our new enclosed apparatus bay-garage which include interior as well as exterior (electrical, cooling, paving and concrete) work. **February 6, 2020** the Ak-Chin Indian Community awarded ($160,000) for the replacement of a 2,000 gallon water tanker truck with 218,000 miles. This truck was sold, and proceeds combined ($199,000) provided a new build on a slightly

used chassis (9,000 miles only) to ultimately deliver a 2010 International Fire Engine with a 1,250 GPM Pump, 1,500 gallon water tank, Foam and all of the room to carry the equipment from a 1995 Pierce Engine. After being stripped of equipment the Pierce was donated to the Queen Valley Fire District in an effort to "pay it forward".
September 7, 2022 the Gila River Indian Community awarded ($153,895) toward a replacement Command Vehicle, a 2023 F250 4x4 (which is still on order and awaiting delivery) and included continued repairs and maintenance to our fire apparatus, our facility and improvements to include the new concrete driveway. *Improvements to our facility are still ongoing and involves more work to the rear apron and our completion of our driveway off of McCartney Road.

C. Reports:
Due to the nature of this request, it is anticipated that a funds provided to make these purchases will be completed rather quickly as we contact the listed vendors to place our orders. The replacement of these (18) SCBAs, place the order for the Eco-CAF System, and contact the vendor (United Fire) to proceed with the listed quote for the quantities and items listed such as supply hoses, fire hoses, nozzles, gas meter will be swift and efficient. There will be no ongoing expenditures over the course of the period provided for this grant. We do not anticipate having unused funds. All funds available will be expended on this project. A final report can be provided as soon as the purchases are completed, and all items are received, inspected and placed into service along with a final vendor invoice/receipt for all items purchased.

D. Budget:
Funds will be provided to the vendor for the equipment received.
Total Funding Requested, $134,500.00.

E. Additional Information.
Please see the picture of the apparatus you provided funding for in 2019-2020. This is Engine-587, a 2010 International 4400 series 1,250 GPM Pumper with Foam and a large capacity water tank (1,500 gallons). This truck was delivered January 2021 and placed in service in March 2021.

Regional Fire & Rescue Department, Inc., was established April 8, 1995 by its Founder, Fire Chief/Paramedic Steven W. Kerber. Chief Kerber has served Pinal County for the past 28 years as Fire Chief, and (10 consecutive years) as the elected Secretary-Treasurer of the Fire Chief's Association from 2007 to 2017. Chief Kerber is a Certified Fire and Explosion Investigator (CFEI) and a founding member of the Fire Investigation Task Force of Pinal County.

Services are provided to individual property owners through annual fire department service agreements or "subscriptions" paid by home and local business owners. Fire department services are not supported by local taxes.

Once a pre-paid fire protection subscriber, they are never charged any "fees for services" should services be required. The annual subscription fee, beginning at $196.00 is the base charge for a subscription and increases only incrementally based on under roof square footage. Unfortunately, of potentially 3500 structures in these 70.1 square miles we serve, approximately 744 (21% of our residents) currently subscribe in support of their fire service. Most are incentivized by our Insurance Protection Class-5/5Y rating, which provides a benefit to homeowner subscribers only within 5 road miles of our station.

For the majority of residents or businesses who are not subscribers, who require our services in an emergency, rarely ever compensate the fire department for our efforts. Collection on Structure Fire invoices annually is only 6%. Of approx. 15 structure fires per year, many are not Subscribers of our service and sadly, we see only one homeowner who is willing to negotiate a settlement or attempt to arrange payments for their fire suppression invoice. Given the socio-economic status (near poverty levels) of the majority of residents of unincorporated Pinal County, this is not unusual. Unpaid balances are considered a charitable benefit to the communities we serve. This includes Randolph, Twilight Trailers, LaPalma, Lake in the Desert, Woodruff Heights, Hopi Hills, Colonia Del Sol, Noble Circle, and many similar communities or enclaves in the unincorporated areas.

We serve the unincorporated areas beginning south of the Gila River Indian Community boundary and as far south as the Tohono O'odham nation at Battaglia and Chuichu Roads. Just under 100 miles of Interstate's 8 & 10 is served along with State Highways 84, 87, 287, 387 and many County arterials in between.

Stated more simply, the funding we receive is simply inadequate. We have no centralized identity and rely on self-governance, where our financial resources must be utilized wisely, coupled with the aggressive pursuit of alternative funding sources. We have served the greater Casa Grande Valley for over 28 years. All of our improvements to the station, apparatus, equipment and vehicles come from the support obtained from our local tribal communities. We thank you for this opportunity in considering our request.

~ BUDGET & JUSTIFICATION ~

QTY:	ITEM:	BRAND:	VENDOR:	UNIT PRICE:	SUB TOTAL:
	AK-CHIN GRANT REQUEST FY-2023				
18	MSA G1 SCBA NFPA 2013	MSA	Empire SCBA	$3,750.00	$67,500.00
1	Eco CAF-60 Self Contained CAFS	Eco CAF	Eco CAF	$11,000.00	$11,000.00
1	TFT MidMatic 70-200 GPM Nozzle	TFT	United Fire	$1,990.00	$1,990.00
3	TFT Vortex 1.5" Firefighting Nozzle	TFT	United Fire	$1,157.81	$3,473.43
3	TFT Flip Tip 1.5 Pistol Grip 7/8ths	TFT	United Fire	$1,198.75	$3,596.25
1	5" to 4" Storz Intake Valve	Elkhart	United Fire	$1,503.75	$1,503.75
16	Attack Line Hose Combat Ready	Key Hose	United Fire	$332.19	$5,315.04
2	4" x 100' RED Nitrile LDH Hose	Key Hose	United Fire	$747.87	$1,495.74
18	4" x 100' Yellow Nitrile LDH Hose	Key Hose	United Fire	$747.87	$13,461.66
1	MSA Altair 5X Gas Meter	MSA	United Fire	$3,002.19	$3,002.19
1	Gas Calibration All-in-One	MSA	United Fire	$341.25	$341.25
3	Harrington HB800 4" NST to 4" Storz		United Fire	$915.78	$2,747.34
	Fire/Rescue Equipment Taxes		United Fire	TAX	$3,212.62
1	DJI M30T Drone (with Sales Taxes)	DJI	Gresco Tech	$15,834.47	$15,834.47
	TOTAL				$134,500.00

Regional Fire is a non-profit, public charitable organization that provides public safety fire protection and EMS/rescue services to the citizens and motorists within the unincorporated areas of Pinal County, south of Coolidge, North of Eloy and surrounding Casa Grande and within the Casa Grande Valley.

We are not taxpayer funded, but supported by 21% of local residents who Subscribe by paying an annual fee based on under roof square footage of their home at a rate of .14 cents per square foot. 1400 sf = $196.00 per year.

Our support is limited, we struggle as an organization to meet financial obligations, cover our overhead expenses while balancing the need for supplies, equipment and to make repairs to our fire apparatus and maintain our facility.

Items included in this request are as follows:

MSA G1 4500 2013 NFPA

includes G1 Mask with built in Voice Amp, G1 Regulator, Power Module, Control Module, HUD, Extendaire II EBSS, Quick Fill Pouch with Remote Quick Fill and new Luxfer 45-Minute Carbon Cylinder, Thermal Imaging Option Available.

Prices starting at:
USD / $3750.00

Vendor #1:

Empire SCBA
Bay 124,
5512-45 Street
Leduc, Alberta, Canada T9E 7B2
www.empirescba.com

Vendor #2:
Eco Product Systems, LLC
19820 Hirsch Court, Suite 1
Anderson, CA 96007
(844) 432-6223

Eco CAF 60 Gallon Unit
To be mounted on the slide out tray of our new Command Vehicle, a 2023 Ford F-250 super cab long bed 4x4. 600 Gallons of finished firefighting foam will be available as an initial attack firefighting vehicle as well as a Command Unit.

Vendor #3:
United Fire Equipment Co. *See Quote #UFEQ36373
335 N. 4th Avenue
Tucson, AZ 85705
(520) 622-3639
Salesperson: Jeff Gilbert
jeffg@ufec.com

Vendor #4:
Gresco Technology Solutions
15425 N. Greenway Hayden Loop, Suite A-225
Scottsdale, AZ

DJI Matrice M30T Series

RFRD "Air Division"
Chief Luis E. Martinez has been featured in two articles within the AIRBEAT Magazine, the Official Journal of the Airborne Public Safety Association. The March-April 2022 issue, pages 18-21, and the most recent article was published in the March-April 2023 issue, pages 34-37. Chief Martinez runs a tight ship and our services are offered under Pinal County "All Risk" Mutual Aid to all Pinal County Agencies in need. Fires, Rescues, Searches can be expedited with the use of Drones. Video and .jpeg images can be captured. A 20 pound payload can deliver water, a portable radio, or a life jacket & helmet to a stranded victim.

UNITED FIRE
Life Safety is Serious Work®

335 N. Fourth Avenue, Tucson, AZ 85705
t. 800.362.0150 f. 800.882.3991

QUOTE

Number UFEQ36373
Date Apr 25, 2023
Dept

Sold To	Ship To	Your Sales Rep
Regional Fire & Rescue Dept., Inc. Steve Kerber 7951 W. McCartney Rd. Casa Grande, AZ 85194 Pinal	**Regional Fire & Rescue Dept., Inc.** Steve Kerber 7951 W. McCartney Rd. Casa Grande, AZ 85194 Pinal	 **Jeff Gilbert** 520-306-1913 jeffg@ufec.com

ACC # REG020
Phone (520)723-4680
Fax (520)723-4681

LID # 17326
Phone (520)723-4680
Fax (520)723-4681

Offer Prepared By: Jeff Gilbert

Here is the quote you requested.

Terms	Tx Code	Due	P.O. #	Ship Via	FOB	N-SO#	N-INV#	Pay Method	Check#
NET 30	LOCATIO	5/9/2023		Best	Factory				

Qty	Part Number	Description	Unit Price	Ext. Price
		TFT Mid-Matic Nozzle		
1	TFTHM-TO-ERP	MID-MATIC™ SERIES 70 - 200 Gpm @ 100 psi - Automatic	$1,990.00	$1,990.00
		This nozzle is going on an EF1 RC Monitor the RC Cable will need to be long enough for this application.		
3	TFTSVFG	VORTEX W/ DETENT VALVE & GRIP 1.5X1.5"NH	$1,157.81	$3,473.43
3	TFTFGF33D1F	FLIP TIP 1.5 NHF VALVE W/GRIP 7/8, SEL 30/60/95/125/150 GPM AT 75 PSI	$1,198.75	$3,596.25
		Intake Valve Elkhart		
1	ELK9786/4STZX5NSF(09786101)	Valve, 5in NSFx 4in STORZ	$1,503.75	$1,503.75
		Attack Line		
16	KEYDP17-1000-50T-ARN	Hose, 1.75x50, Combat Ready TAN, 1.5in NH	$332.19	$5,315.04
		Supply Line		
2	KEYRC40-500/100R	Hose, RED, 4" x 100' Nitrile, w/4.0" Storz Cplg.	$747.87	$1,495.74

Qty	Part Number	Description	Unit Price	Ext. Price
18	KEYRC40-500/100Y	Hose,Yellow, 4" x 100' Nitrile, w/4.0" Storz Cplg.	$747.87	$13,461.66
		Gas Monitor & Cal Gas - MSA		
1	MSA10116926	Instrument, Altair 5X, Mono (LEL,O2,CO,H2S), (UL), Charcoal, Standard, Monochrome Display, 10' Line, 1' Probe	$3,002.19	$3,002.19
1	MSA10048280	Gas, Calibration, 4in1	$341.25	$341.25
		Hydrant Gate Valve		
3	HARH800-40-40NHLH	4" Gate valve straight 4" NH long handle female swivel rocker lug inlet x 4" Storz-Lok outlet	$915.78	$2,747.34
		Freight		
1	FRT	Freight & Handling-Estimate, Shipping will be pre paid and added to the invoice.	$0.00	$0.00

SubTotal	$36,926.65
Tax	$3,212.62
Shipping	$0.00
Total	**$40,139.27**

Please contact me if I can be of further assistance.

Terms & Conditions of Sale: Prices quoted are firm for thirty (30) days unless otherwise noted. When you accept a quote it is our indication that you have selected any required changes, carefully reviewed all part numbers, descriptions, unit quantities, taxes, shipping, and handling charges. A 50% deposit is required on all engineered projects and orders for non-stock items without approved payment terms. United Fire accepts all major credit cards, cash, business checks, and EFT's. Automatic monthly and quarterly credit card billing options are offered for inspection and maintenance packaged services. We hope you use our products safely. In the event that an item needs to be replaced or returned we will attempt to make reasonable accommodations. In accordance with United Fire's return policy, a re-stocking fee may be applied at the time of a return. There is a $35.00 fee for cancelling scheduled services within 24 Hours of a set appointment. The order process begins when you sign and accept the quote and make any required incremental payments. Orders do not ship until a full payment has been authorized via approved purchase order or credit card. There is a 1.5% per month late charge on all past due invoices. LIMITATION OF LIABILITY: The Seller's liability whether in contract, in tort, under any warranty, in negligence or otherwise, shall not exceed One Thousand Dollars ($1000.00) and buyer's remedy or damages shall be limited to, the return of the purchase price paid. Under no circumstances shall seller be liable for consequential or special damages.

More T&C's and have been adjusted to print only on the last page.

Another T&C that is lower and takes more space.

And another T&C that is even lower and takes up more space. The spacing has all beeen compressed so that most white space is removed. We could have the T&C's only print on the last page for multiple page quotes.

Quote

Entered Date	Taken By	Customer #	Order #
2/14/23	jgra	10419	10206091-00
		PO #	Page #
		L.Martinez.021423	1

Bill To
CASH-GRESCO UAS SALES
1135 Rumble Rd

Forsyth, GA 31029-6350

Ship To
Regional Fire & Rescue Departm
ATTN: Luis Martinez
7951 West McCartney Road
Casa Grande, AZ 85194

Remit To
GRESCO
PO BOX 932918

ATLANTA, GA 31193-2918

Instructions

Ship Point	Via	Shipped	Terms	SlsRepIn/Out
Gresco-Small Parts	Best Way		Upon Receipt	uas1 / uas1

Notes

QUOTE EXPIRATION: Quote is valid 60 days from "Entered Date" as shown above.
FREIGHT: Complimentary ground shipping provided.
ARIZONA STATE CONTRACT NUMBER: CTR047229
PREVIOUSLY INNOVATIVE UAS
TOTAL DISCOUNT: $1,467.70

Line	Product and Description	Order Quantity	Qty UM	Unit Price	Price UM	Amount(Net)
1	**DRK-DJI-M30T** Drone Kit - Matrice 30T	1.00	ea	13,999.00	ea	13,299.05
1 Com 1	6941565929457 MATRICE 30T	1.00	EA			
1 Com 2	6941565927026 DJI Care Enterprise Basi	1.00	EA			
1 Com 3	6941565927620 MATRICE 30 SERIES TB30 I	2.00	EA			
2	**6941565927620** MATRICE 30 SERIES TB30 I ntelligent Flight Batter	4.00	EA	329.00	EA	1,250.20
3	**6958265145827** WB37 Intelligent Battery CrystalSky/Cendence RC	1.00	EA	59.00	EA	56.05

Line	Product and Description	Order Quantity	Qty UM	Unit Price	Price UM	Amount(Net)
4	**UAS-STARTUP-M30/T** Start Up Services for Matrice 30/T START UP SERVICES: Aircraft setup, activation, updates, testing and calibration. This service ensures the aircraft is Ready-to-Fly (RTF) upon delivery.	1.00	EA	300.00	EA	0.00
5	**UAS-Support** Gresco's UAS Service Center is staffed with certified repair technicians and product specialists who are available for any questions, troubleshooting, and other aircraft support needs. Access to Gresco Support Representatives via email, chat, text, phone, and video conference.	1.00	EA	399.00	EA	0.00
5	**Lines Total** **Total Order Quantity** **8.00**				**Subtotal**	**14,605.30**
					Taxes	**1,229.17**
					Total	**15,834.47**

The Official Journal of the Airborne Public Safety Association

AIR BEAT

March-April 2022

FLY-TECH:

UNMANNED SYSTEMS TECHNOLOGY LEAPS FORWARD

APSA AWARDS & SCHOLARSHIPS DETAILS INSIDE

FIGHTING FLEET:

Unmanned Aircraft Systems in the Fire Service

By Luis E. Martinez, *UAS Pilot, Regional (AZ) Fire and Rescue Department*

U.S. fire departments have adopted unmanned aircraft technology rapidly, and their integration of the devices shows no sign of slowing down.

The American fire service has traditionally identified and adopted modern technologies quickly and efficiently. Fire service personnel, from top command officers to line firefighters, tend to keep more open minds than their colleagues in other government agencies about new and innovative tactics. Examples include using infrared/thermal handheld devices, improved personal protective equipment, efficient fire pumps, ultramodern radio communication systems, and new methods of identifying and managing hazardous material spills.

But adopting modern technology also brings valid concerns, such as acquisition and personnel expenses for implementing new firefighter tools, as well as researching and writing the standard operating guidelines (SOGs) required for every aspect of the fire service.

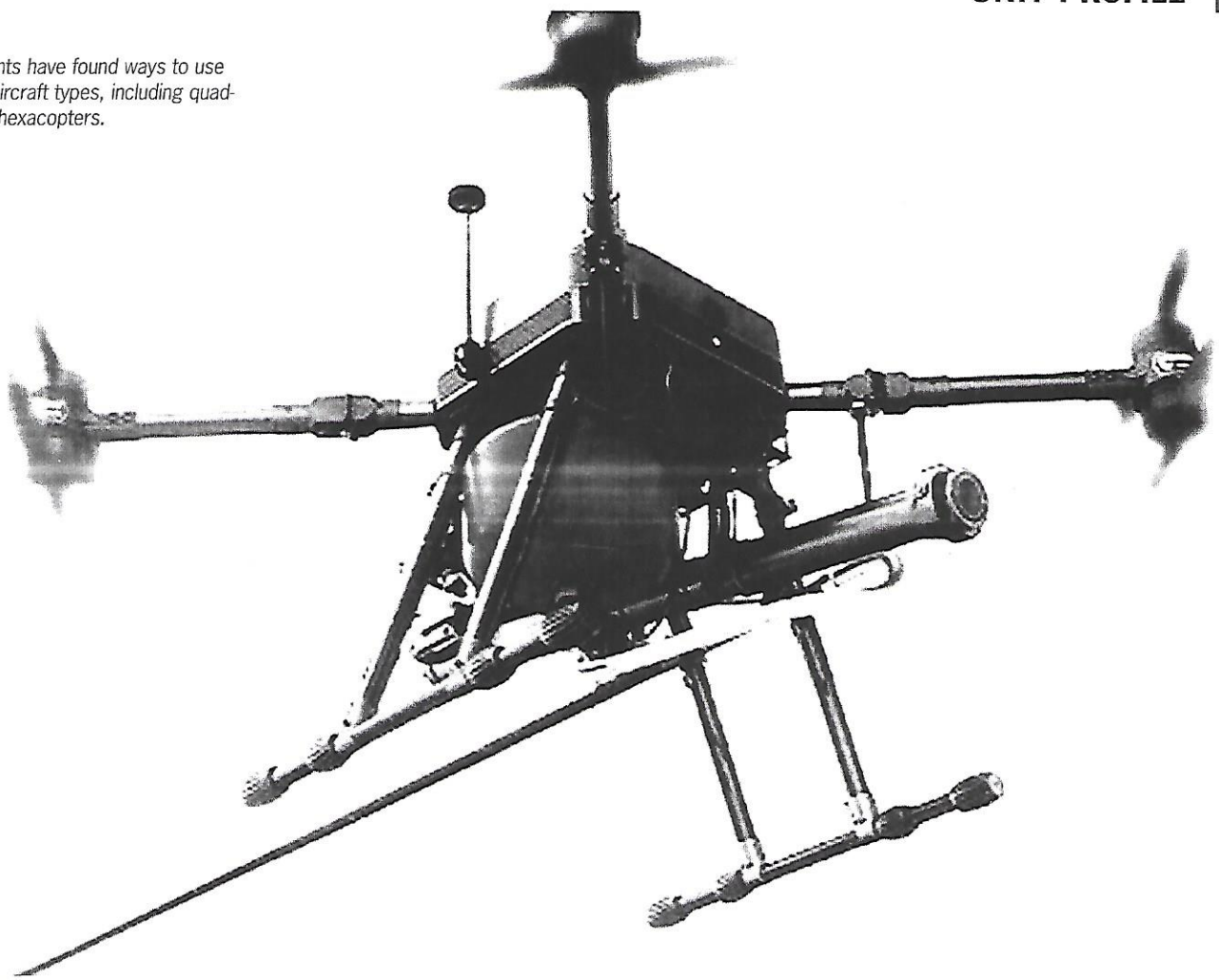
Unmanned aircraft systems are no different. Drones have rapidly become the norm in firefighting operations, but units must carefully consider many factors when purchasing new unmanned equipment and deploying it in the field.

Forged for Fire

Consumer-level unmanned aircraft systems became popular among American hobbyists in the early 2010s. Before that, electronics and radio-controlled model aircraft enthusiasts built their own devices.

The earliest commercial UAS models were small and difficult to fly, and none of the units was equipped with the ability to send live, real-time images back to the operator. Some shot low resolution photos and saved them to secure digital memory cards. The operator could then land the drone, remove the card and view the photos on a computer.

In 2013, the Chinese drone giant DaJiang Innovations (DJI), a manufacturer now controlling about 72 percent of the worldwide consumer drone market, introduced its flagship UAS, the Phantom. The first Phantom was a quadcopter (i.e. powered by four motors), offered flight time of about 10 minutes and had no camera. Users could purchase a GoPro or other lightweight recording device and attach it to the aircraft. Lacking a robust and professional quality gimbal, the cameras produced footage serving little serious purpose.

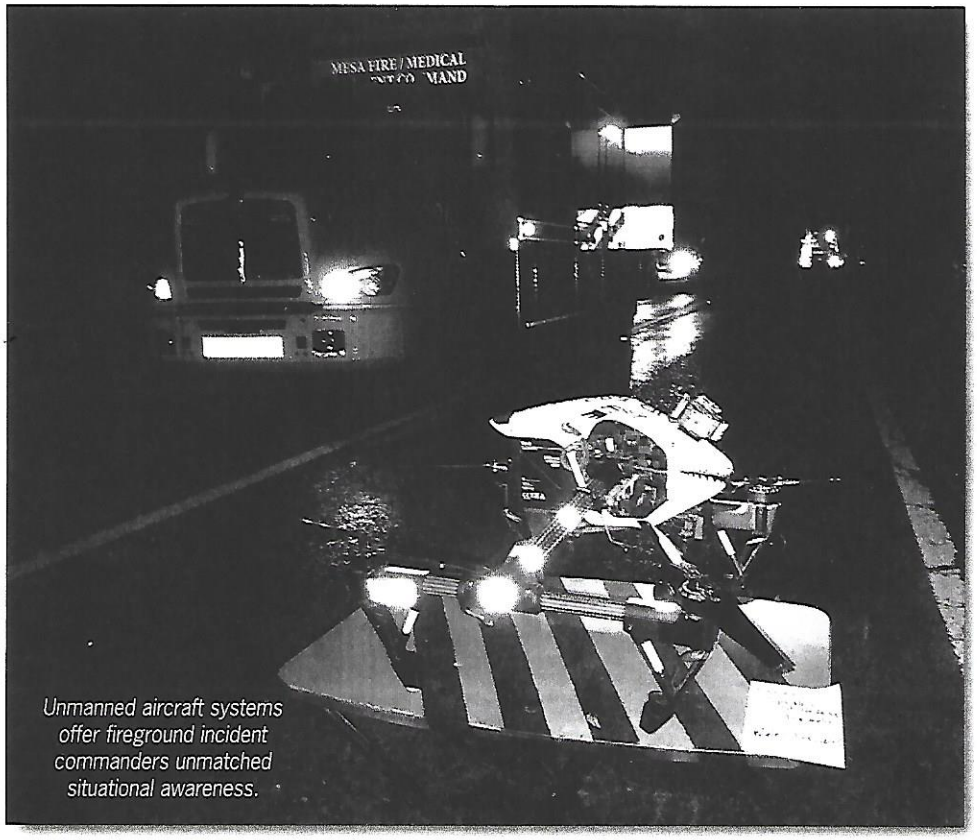


U.S. fire departments have found ways to use various unmanned aircraft types, including quad- and hexacopters.

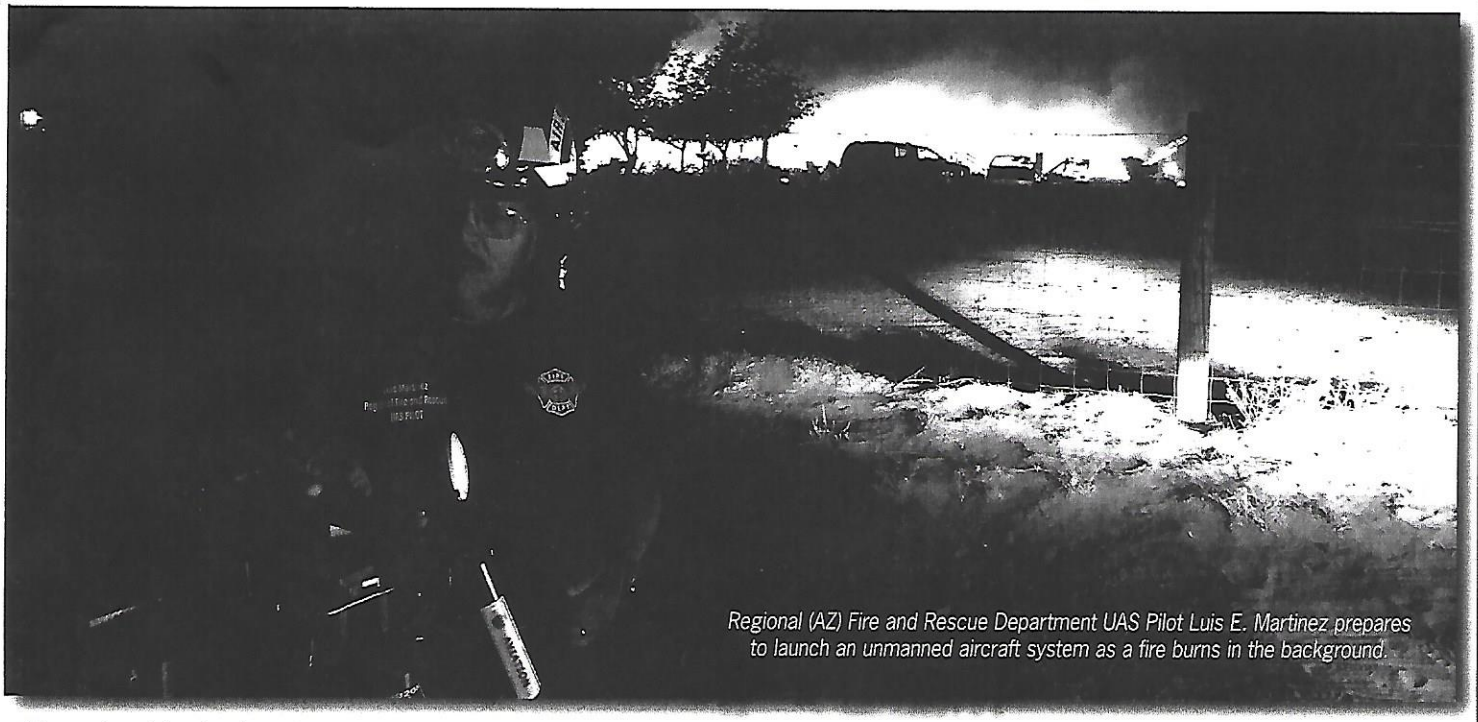
Over the next eight years, DJI, Anafi, Autel, Yuneec, Skydio and other manufacturers developed and released quadcopters and hexacopters sufficiently advanced to impact every facet of aerial imaging, from local real estate photographs to Hollywood cinematography, and eventually to public safety applications.

It is difficult to determine which U.S. fire department first adopted UAS technology. Many lay claim to the title, but no organization currently tracks the information. According to a study by the Center for the Study of the Drone at Bard College, at least 910 U.S. state and local law enforcement, fire and emergency services agencies had acquired drones by 2018. The figure likely now greatly exceeds 1,000. Whatever the number, public safety agencies across the country have recognized the value of deploying UAS on fire calls and other first responder emergencies.

On fire scenes, incident commanders (ICs) equipped with UAS have exponentially greater management ability than ever before. Fireground command can deploy UAS quickly and gain an airborne perspective within minutes of on-scene arrival, trans-



Unmanned aircraft systems offer fireground incident commanders unmatched situational awareness.



Regional (AZ) Fire and Rescue Department UAS Pilot Luis E. Martinez prepares to launch an unmanned aircraft system as a fire burns in the background.

mitting a live video feed straight to command. The IC gains a tactical picture and incident awareness almost immediately by using UAS to determine the location and extent of the fire, deploy equipment and personnel, and identify potential hazards.

Understanding Regulatory Requirements

Public safety agencies can choose from various Federal Aviation Administration options when operating UAS within the National Airspace System. The most popular option for U.S. fire services is to follow 14 CFR Part 107 and certify remote pilots individually as they complete FAA written exams. Agencies can also become public aircraft operators under 49 U.S.C. §40102(a) and § 40125. The approach allows them to self-certify drone pilots and UAS for flights pertaining to governmental functions.

The public aircraft operator path requires agencies to negotiate with FAA a written agreement that includes standardized training, equipment, operational regulations and reporting requirements. The resulting certificate of authorization is a legal document issued by the FAA Air Traffic Organization to public operators for specific unmanned aircraft activities.

No two fire agencies are alike, and choosing a UAS operation path requires research and planning. One agency may be better suited to the Part 107 approach, while another may benefit from a COA. Fire departments considering UAS adoption should meet with other agencies and discuss their decision-making processes and justifications.

"Fire service programs could soon deploy UAS autonomously and integrate the devices with computer aided dispatch systems, allowing them to arrive on scene ahead of ground forces."

Conducting a Needs Assessment

The first step in launching any fire service UAS program should be instituting clear parameters—the program's who, what, when, where and why. Whether they are using FAA's Part 107 or COA process, agencies must determine on their own which aircraft to use, how to staff the program (e.g. full time, part time, volunteer), and how to structure their SOGs.

Conducting a thorough needs assessment is therefore critical in developing any fire service UAS program. Agency staff members must know what they want; if they do not know where they want to go, almost any route will get them there. And, without stakeholder buy-in, many critics and naysayers eventually will emerge.

Fire agencies should also address public/community perception before starting a UAS program. Although the concern can be greater for law enforcement than fire agencies, community outreach in advance of flight operations can improve public relations.

Many firefighting organizations, usually driven by one headstrong individual, pursue programs or goals without understanding every issue involved. The results are predictable—the program, equipment or change satisfies few and management feels let down and becomes less willing to try new things. Discussions at every level should therefore be at the core of every needs assessment. The project lead should brief top managers on UAS pros and cons. What are command's expectations from the program? How will the function enhance public safety in fireground operations? What are the initial and sustaining costs? How will flight crews be selected? What about personnel costs? Labor union concerns?

Similar discussions should be held at the company level with officers, as well as at the firefighter level. The toughest customers are often the firefighters, the end users. What will drones do for them? How will they make their job easier? How will they make their job—and the public—safer?

Before Deployment

Once agencies have completed their needs assessment and selected a UAS, they must develop training standards specific to the chosen aircraft. In professional aviation, all pilots must train and qualify in each aircraft they wish to fly. The same should be true in professional UAS operations.

UAS programs are aviation units by definition, and fire departments must create their SOGs accordingly. Operating a casual UAS program can lead to serious mishaps and injuries. Management should not allow UAS flights, including training operations, until the unit has approved its SOGs, reviewed by command and a legal advisor, and flight crews are trained to the document's standards.

Once both day and night training have been completed and flight crews show they are comfortable flying actual missions, airborne fire service agencies can declare their UAS unit operational. Training must include basic UAS maneuvering and flight skills and simulated missions based on agency history. Fire departments should furthermore require annual in-service UAS training, as flying skills deteriorate over time.

Agencies should not attempt to build their UAS programs from scratch. They might consider allowing their flight crews to accompany neighboring agencies' UAS teams on missions so they can observe real-world applications.

UAS on the Fireground

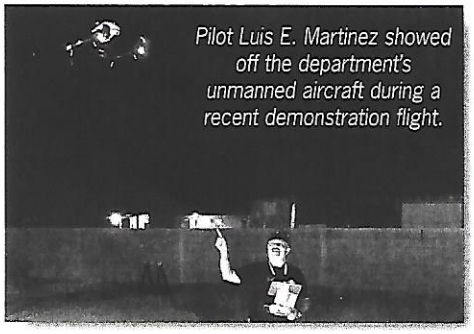
Like manned airborne assets, UAS offer a game changing, multidimensional view of the world. Human beings are accustomed to seeing the world from the ground. The first time most people see their environment from the air, they immediately recognize the perspective's unique nature.

Those who become aviators and leave the ground regularly understand the difference between airborne and ground-based visual perception. UAS efficiently offer this enhanced spatial awareness to fireground command, a perspective historically lacking in all but the largest metropolitan agencies with traditional aviation units.

ICs receiving live video streaming from UAS gain instant awareness of the extent of a fire or other emergency and can begin building a tactical picture in their mind. Command and control are optimized. The addition of infrared sensors to small UAS increases the options available to fireground commanders, allowing them to locate hotspots and thermal flows.

According to Chief Otto Drozd III of the Orange County (CA) Fire Rescue Department, unmanned aviation enhances fireground command and firefighter safety during:

- Scene assessment.
- Structure fire situations.
- Hazardous materials response.
- Damage assessments.
- Air monitoring.



Pilot Luis E. Martinez showed off the department's unmanned aircraft during a recent demonstration flight.

- Search and rescue.
- Water rescues.
- Pre-incident planning.
- Transportation accidents.
- Special event planning/monitoring.
- Chemical detection.

The U.S. Department of the Interior, the country's largest land caretaker, has incorporated a fleet of about 900 drones into its aerial firefighting arsenal since 2010. The department uses the UAS to monitor active fires, map scenes and guide aerial ignition, a process by which airborne assets drop devices to start backfires either to redirect existing fires or deprive them of fuel. According to Fire Aviation's Bill Gabbert, the University of Nebraska began testing UAS for aerial ignition purposes in 2015.

Wildland firefighting is not limited to the federal government's large land tracks. Both county and municipal fire services must fight brush fires with extensive exposures. UAS provide incident command posts with real time intelligence on wildland fires' size, perimeter, spread and intensity.

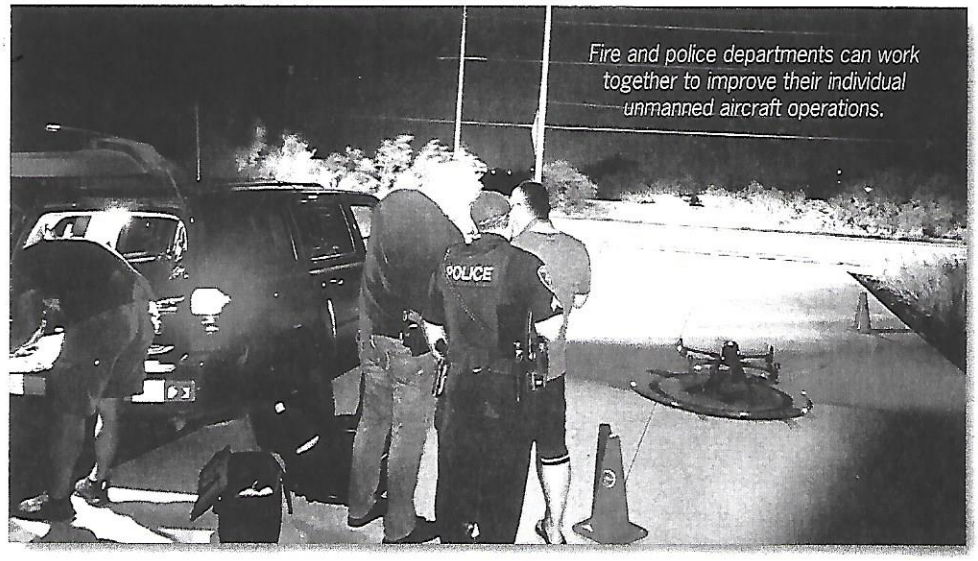
Drones' Future in Fire

Technological development has accelerated at dizzying speeds, and breakthroughs have come at fire service agencies faster than they could understand them or begin to assimilate all the new technology. The near future promises no reduction in humanity's search for innovation and safer airborne operations.

Fire departments may eventually establish UAS hangars on station rooftops, readying the devices for autonomous deployment when the alarm sounds. The Chula Vista (CA) Police Department (CVPD) has led the way in autonomous UAS response programs. According to the city's website, CVPD began deploying drones from its headquarters rooftop in 2018, responding to 911 calls and reports of emergency incidents, crimes in progress, fires and traffic accidents.

Fire service programs like CVPD's could soon deploy UAS autonomously and integrate the devices with computer aided dispatch systems, allowing them to arrive on scene ahead of ground apparatuses and provide firefighters and commanders en route with never-before-seen situational awareness. Milwaukee Fire Department Captain Jordan Ponder suggested in *Fire Engineering* magazine that UAS could eventually be as significant to firefighting as self-contained breathing apparatuses were when they were introduced in 1945.

Indeed, the day will likely come when one of the first questions fireground commanders ask when they arrive on scene will be, "where are the drones?"



Fire and police departments can work together to improve their individual unmanned aircraft operations.

The Official Journal of the Airborne Public Safety Association

AIRBEAT

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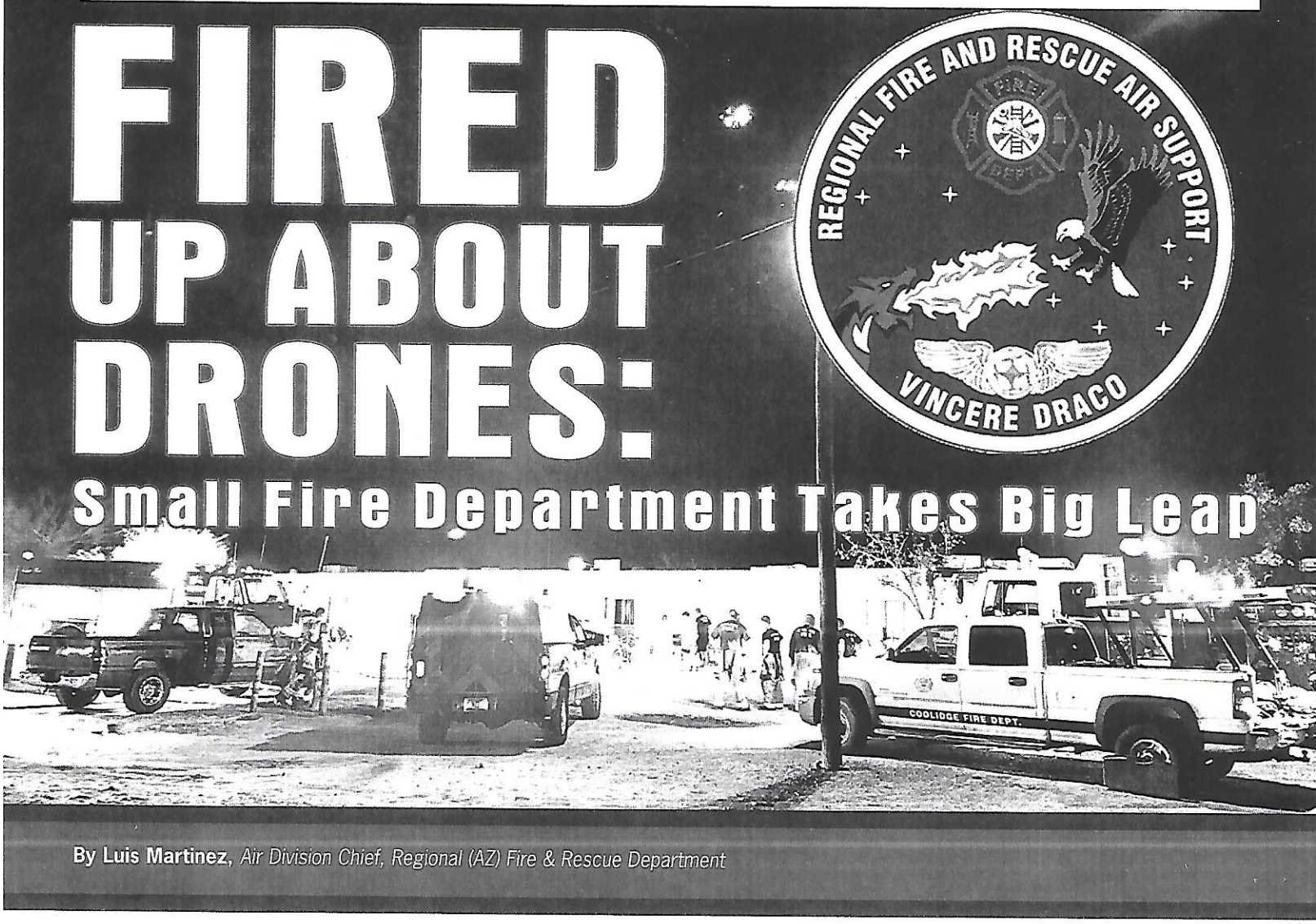
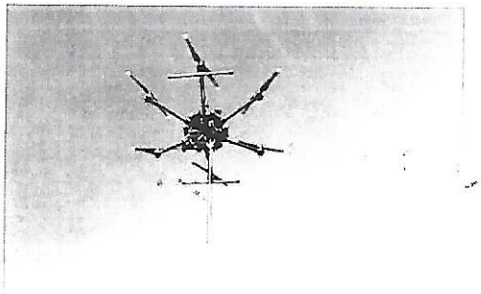
Small Fire Department Takes Big Leap



By **Luis Martinez**, *Air Division Chief, Regional (AZ) Fire & Rescue Department*



Air support to fireground incident commanders improves efficiency and personnel safety. For Pinal County's humble Regional (AZ) Fire & Rescue Department, drones and the situational awareness they provide have become essential.

The Regional Fire & Rescue Department (RFRD) in Arizona's Pinal County celebrated its 25-year anniversary in 2020. Since 1995, the nonprofit organization has provided fire and emergency medical services to all unincorporated areas in Central Pinal County.

RFRD currently operates out of a single fire station located at the intersection of McCartney Road and Overfield Road, one mile south of Central Arizona College in the northeast Casa Grande area. The small department consists of four full-time firefighters under the fire chief, one administrator, and up to 20 part-time reserve firefighters and volunteers. RFRD serves roughly 10,000 people living across a primarily rural 96-square-mile area.

In 2019, Fire Chief Steven Kerber was approached by a local commercial uncrewed aircraft systems operator and Federal Aviation Administration-certificated remote pilot, who offered to make his services and aircraft available to the department on a volunteer basis. The volunteer, a retired police officer and commercial pilot, had previously helped organize UAS units for two police departments.

Kerber embraced the opportunity to incorporate a new technology at little to no

cost. Using volunteers as force multipliers was not new to the agency. The next step was a face-to-face meeting with management and discussion of the benefits air assets bring to the fireground.

After four years of providing UAS support, RFRD promoted the original volunteer to the position of division chief, with a mandate to expand the division. Today, the RFRD Air Division includes five personnel and continues to grow.

Assessing Needs

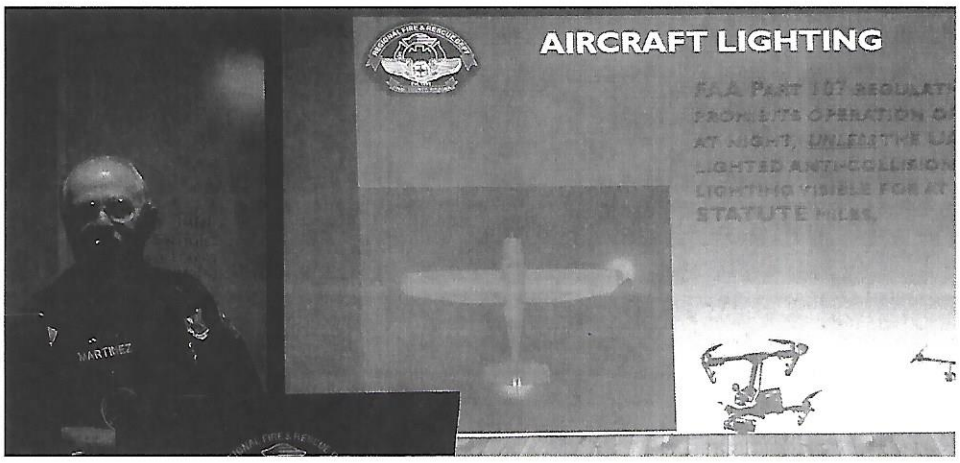
Prior to starting its new uncrewed aircraft program, RFRD established clear program parameters—the operation's what, when, where and who. FAA permits public agency drone operation under one of two conditions. Either option—Part 107 or certificate of authorization—requires public agencies to do considerable planning for aircraft, flight crew staffing (full-time, part-time, volunteers), standard operations guidelines and more.

The pre-planning process begins with a thorough needs assessment. RFRD met with key staff members and allowed them to offer input. Gaining stakeholder buy-in leads to fewer critics later in the process.

Another critical issue for any new drone program is public/community perception. Specifically for law enforcement agencies, reaching out to the community before flight operations helps the ever-present public relations battle down the road.

Understanding RFRD Aviation

RFRD currently operates two DJI Inspire 1s and one DJI Matrice 600. Both offer



visual and infrared imaging payloads. The department has modified the 600 with a public address system and drop mechanism. All equipment is on loan to the agency by one of its volunteers. The department is pursuing a grant to acquire a DJI Matrice M30T as a next generation replacement later this year.

After RFRD's volunteer UAS pilot joined the department, he developed the unit's operations manual. The flight operations guidelines (FOG) were prepared after reviewing the National Fire Protection Association's 2400 Standard for Small Unmanned Aircraft Systems Used for Public Safety Operations. The FOG document addresses concerns common to any aviation unit: safety procedures; minimum training standards for personnel; minimum qualifications to achieve aviator ratings and act as mission pilots-in-command, observers and sensor operators; pre-flight checklists for every aircraft; weather minimums; records and forms; job descriptions for every position; and emergency procedures.

Following are RFRD's chief pilot/instructor position minimum qualifications and duties as stated in the FOG:

8.2 Chief Pilot/Instructor
The Chief Pilot/Instructor is the senior UAS aviator within the department and is responsible for:

a) Reading and interpreting technical procedures, manufacturer's manuals, and flight manuals.

b) Ensuring strict adherence to the Air Division FOG and all applicable RFRD standard operations guidelines.

c) Ensuring compliance with federal and state laws and regulations, including FARs.

d) Ensuring all flight crews meet or exceed standards as set by the Air Division FOG and removing any personnel not meeting standards from flight status.

e) Ensuring the unit is updated to the latest training and equipment information and FAA regulations in the UAS field.

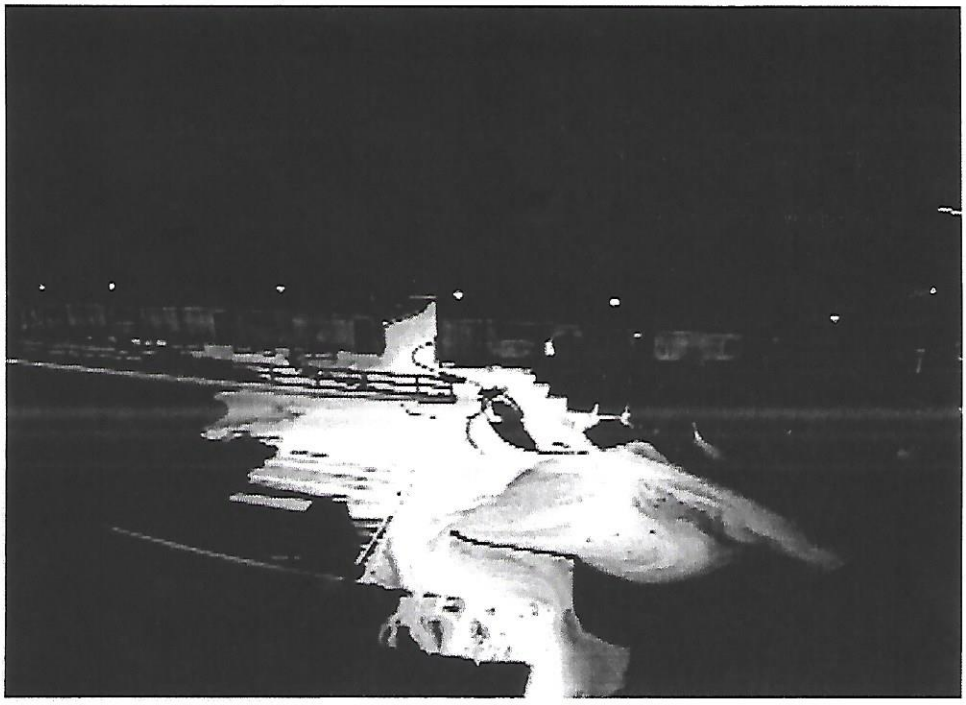
f) Training flight crews in their duties to meet qualifications/maintain currency.

g) Flying as PIC as needed.

h) Minimum qualifications:

1. RFRD employee or volunteer at least 21 years old.
2. FAA Part 107 Remote Pilot Certificate.
3. Minimum 100 logged hours as UAS PIC; 25 of the 100 in UAS at least 7 pounds maximum takeoff weight.

"RFRD drew on extensive prior knowledge of UAS operations and equipment to lay the groundwork for its drone program."



RFRD's pilot-in-command responsibilities and qualifications are similarly strict. FAA demands that all aviators, including UAS pilots, have a clear and complete understanding of their duties when acting as PIC, which are identical for crewed and uncrewed aircraft. FAA Part 107 defines who can act as a PIC as follows:

§ 107.19 Remote Pilot-in-Command

(a) A remote pilot in command must be designated before or during the flight of the small unmanned aircraft.

(b) The remote pilot in command is directly responsible for and is the final authority as to the operation of the small unmanned aircraft system.

(c) The remote pilot in command must ensure that the small unmanned aircraft will pose no undue hazard to other people, other aircraft, or other property in the event of a loss of control of the small unmanned aircraft for any reason.

(d) The remote pilot in command must ensure that the small UAS operation complies with all applicable regulations of this chapter.

(e) The remote pilot in command must have the ability to direct the small unmanned aircraft to ensure compliance with the applicable provisions of this chapter.

The RFRD Air Division FOG incorporates each of FAA's legal requirements and makes them part of the department's aviator training process.

Thorough Pilot Training

Any RFRD officer or community volunteer wanting to become a UAS aviator must complete a four-phase process, regardless of previous experience. Phases one and two consist of approximately four hours in the classroom covering the unit's FOGs and aircraft, as well as basic FAA regulations. Basic UAS flight training for those with no prior experience is included in phase two, along with familiarization with the National Institute of Standards and Technology UAS Course/Basic Proficiency Evaluation for Remote Pilots (BPERP, available at www.nist.gov/el/intelligent-systems-division-73500/standard-test-methods-response-robots/aerial-systems).

All trainees must successfully complete the BPERP course before moving to RFRD's phase three, which involves a four-hour combination of classroom and flight training

concentrated on the unique aspects and conditions of night flying and the principles and operation of infrared devices. The final phase of in-house training includes search and rescue and fireground communications scenarios. Aviator trainees are introduced to the large M600 aircraft and participate in day and night searches and simulated fires.

After phase four, RFRD's in-house FAA examination preparation instructor, an FAA commercial pilot, conducts a 32-hour course to prepare trainees to successfully complete the FAA Remote Pilot Exam. Once trainees receive their FAA certificate, they are rated as aviators and permitted to fly as pilot-in-command during fire missions when they have at least five hours in their logbooks for heavy UAS of at least 5 pounds. Every rated aviator must log at least 44 hours before they pin on their wings. RFRD currently has two fully mission-qualified aviators and three trainees in different phases.

RFRD drew on extensive prior knowledge of UAS operations and equipment to lay the groundwork for its drone program. And while not every public safety agency will have personnel in its ranks with prior drone experience, it is likely that individuals within each community will have some of the required skills.

The citizens of Central Pinal County are safer today because of a little luck and a fire chief with the foresight to recognize the value of technology and volunteers. Now, RFRD is looking ahead to another quarter century of service to the community—including from above.

INTERNAL REVENUE SERVICE
P. O. BOX 2508
CINCINNATI, OH 45201

DEPARTMENT OF THE TREASURY

Date: JAN 11 2005

REGIONAL FIRE & RESCUE DEPARTMENT
INC
C/O CARIANNE WESTON
711 E COTTONWOOD LN STE C
CASA GRANDE, AZ 85222-0000

Employer Identification Number:
20-1533415
DLN:
17053337005004
Contact Person:
MICHAEL A LUDWIG ID# 31470
Contact Telephone Number:
(877) 829-5500
Accounting Period Ending:
DECEMBER 31
Public Charity Status:
509(a)(2)
Form 990 Required:
YES
Effective Date of Exemption:
JUNE 23, 2004
Contribution Deductibility:
YES
Advance Ruling Ending Date:
DECEMBER 31, 2008

Dear Applicant:

We are pleased to inform you that upon review of your application for tax exempt status we have determined that you are exempt from Federal income tax under section 501(c)(3) of the Internal Revenue Code. Contributions to you are deductible under section 170 of the Code. You are also qualified to receive tax deductible bequests, devises, transfers or gifts under section 2055, 2106 or 2522 of the Code. Because this letter could help resolve any questions regarding your exempt status, you should keep it in your permanent records.

Organizations exempt under section 501(c)(3) of the Code are further classified as either public charities or private foundations. During your advance ruling period, you will be treated as a public charity. Your advance ruling period begins with the effective date of your exemption and ends with advance ruling ending date shown in the heading of the letter.

Shortly before the end of your advance ruling period, we will send you Form 8734, Support Schedule for Advance Ruling Period. You will have 90 days after the end of your advance ruling period to return the completed form. We will then notify you, in writing, about your public charity status.

Please see enclosed Information for Exempt Organizations Under Section 501(c)(3) for some helpful information about your responsibilities as an exempt organization.

Letter 1045 (DO/CG)

REGIONAL FIRE & RESCUE DEPARTMENT

We have sent a copy of this letter to your representative as indicated in your power of attorney.

Sincerely,

Lois G. Lerner

Lois G. Lerner
Director, Exempt Organizations
Rulings and Agreements

Enclosures: Information for Organizations Exempt Under Section 501(c)(3)
Form 872-C

UP 00 000000 200844 26 139252 158

R16760 TE3 201533415

Department of the Treasury
Internal Revenue Service
EO Rulings and Agreements
P O BOX 2508
CINCINNATI OH 45201

Date of this notice: November 10, 2008
Notice Number: CP-158
Taxpayer Identification Number:
20-1533415

104269.555114.0498.012 1 AT 0.346 695

Advance Ruling Period Ending Date:
December 31, 2008

REGIONAL FIRE & RESCUE DEPT
% STEVE KERBER
7951 W MCCARTNEY RD
CASA GRANDE AZ 85294-7417517

For assistance, call:
1-877-829-5500

104269

Our records indicate that you were issued an advance ruling letter that treated you as a public charity, rather than a private foundation, during an advance ruling period that ends on the date indicated above. That letter required you to file IRS Form 8734 at the end of your advance ruling period to establish that you qualify as a public charity.

New IRS regulations changed the procedures governing your public charity status. You are no longer required to file Form 8734 at the end of the ruling period. The regulations also provide that donors can rely on your advance ruling letter with respect to your public charity status unless the IRS changes that status, based on the organization no longer meeting an applicable public support test, and publishes notice of the change.

If you have received Form 8734 from the IRS, please do not file it. Please keep your advance ruling letter along with this letter for your permanent records.

The regulations also changed the rules for computing public support, consistent with the redesigned Form 990, Return of Organization Exempt from Income Tax. For more information regarding those rules and the redesigned Form 990, please see the IRS website at www.irs.gov/eo.