U.S. Department
of Transportation
**Federal Aviation
Administration**

800 Independence Ave., S.W.
Washington, D.C. 20591

June 23, 2015

Exemption No. 11891
Regulatory Docket No. FAA–2015–0778

Ms. Constance M. Pendleton, Esq.
Mr. Davis Wright Tremaine LLP
Counsel for Idaho Power Company
1919 Pennsylvania Avenue, NW.
Suite 800
Washington, DC 20006

Dear Ms. Pendleton and Mr. Wright:

This letter is to inform you that we have granted your request for exemption. It transmits our decision, explains its basis, and gives you the conditions and limitations of the exemption, including the date it ends.

By letter dated March 23, 2015, you petitioned the Federal Aviation Administration (FAA) on behalf of Idaho Power Company (hereinafter petitioner or operator) for an exemption. The petitioner requested to operate an unmanned aircraft system (UAS) to conduct low altitude environmental research and resource monitoring, including monitoring of salmon spawning activity in the Snake River.

See Appendix A for the petition submitted to the FAA describing the proposed operations and the regulations that the petitioner seeks an exemption.

The FAA has determined that good cause exists for not publishing a summary of the petition in the Federal Register because the requested exemption would not set a precedent, and any delay in acting on this petition would be detrimental to the petitioner.

**Airworthiness Certification**

The UAS proposed by the petitioner is a MikroKopter sUAS.

The petitioner requested relief from 14 CFR part 21, *Certification procedures for products and parts, Subpart H—Airworthiness Certificates*. In accordance with the statutory criteria provided in Section 333 of Public Law 112−95 in reference to 49 U.S.C. § 44704, and in consideration of the size, weight, speed, and limited operating area associated with the aircraft and its operation, the Secretary of Transportation has determined that this aircraft meets the conditions of Section 333. Therefore, the FAA finds that the requested relief from 14 CFR part 21, *Certification procedures for products and parts, Subpart H—Airworthiness Certificates*, and any associated noise certification and testing requirements of part 36, is not necessary.

**The Basis for Our Decision**

You have requested to use a UAS for aerial data collection. The FAA has issued grants of exemption in circumstances similar in all material respects to those presented in your petition. In Grants of Exemption Nos. 11062 to Astraeus Aerial (*see* Docket No. FAA−2014−0352), 11109 to Clayco, Inc. (*see* Docket No. FAA−2014−0507), 11112 to VDOS Global, LLC (*see* Docket No. FAA−2014−0382), and 11213 to Aeryon Labs, Inc. (*see* Docket No. FAA−2014−0642), the FAA found that the enhanced safety achieved using an unmanned aircraft (UA) with the specifications described by the petitioner and carrying no passengers or crew, rather than a manned aircraft of significantly greater proportions, carrying crew in addition to flammable fuel, gives the FAA good cause to find that the UAS operation enabled by this exemption is in the public interest.

Having reviewed your reasons for requesting an exemption, I find that—

- They are similar in all material respects to relief previously requested in Grant of Exemption Nos. 11062, 11109, 11112, and 11213;
- The reasons stated by the FAA for granting Exemption Nos. 11062, 11109, 11112, and 11213 also apply to the situation you present; and
- A grant of exemption is in the public interest.

**Our Decision**

In consideration of the foregoing, I find that a grant of exemption is in the public interest. Therefore, pursuant to the authority contained in 49 U.S.C. 106(f), 40113, and 44701, delegated to me by the Administrator, Idaho Power Company is granted an exemption from 14 CFR §§ 61.23(a) and (c), 61.101(e)(4) and (5), 61.113(a), 61.315(a), 91.7(a), 91.119(c), 91.121, 91.151(a)(1), 91.405(a), 91.407(a)(1), 91.409(a)(1) and (2), and 91.417(a) and (b), to the extent necessary to allow the petitioner to operate a UAS to perform aerial data collection. This exemption is subject to the conditions and limitations listed below.

**Conditions and Limitations**

In this grant of exemption, Idaho Power Company is hereafter referred to as the operator.

Failure to comply with any of the conditions and limitations of this grant of exemption will be grounds for the immediate suspension or rescission of this exemption.

1. Operations authorized by this grant of exemption are limited to the MikroKopter sUAS when weighing less than 55 pounds including payload. Proposed operations of any other aircraft will require a new petition or a petition to amend this exemption.

2. Operations for the purpose of closed-set motion picture and television filming are not permitted.

3. The UA may not be operated at a speed exceeding 87 knots (100 miles per hour). The exemption holder may use either groundspeed or calibrated airspeed to determine compliance with the 87 knot speed restriction. In no case will the UA be operated at airspeeds greater than the maximum UA operating airspeed recommended by the aircraft manufacturer.

4. The UA must be operated at an altitude of no more than 400 feet above ground level (AGL). Altitude must be reported in feet AGL.

5. The UA must be operated within visual line of sight (VLOS) of the PIC at all times. This requires the PIC to be able to use human vision unaided by any device other than corrective lenses, as specified on the PIC's FAA-issued airman medical certificate or U.S. driver's license.

6. All operations must utilize a visual observer (VO). The UA must be operated within the visual line of sight (VLOS) of the PIC and VO at all times. The VO may be used to satisfy the VLOS requirement as long as the PIC always maintains VLOS capability. The VO and PIC must be able to communicate verbally at all times; electronic messaging or texting is not permitted during flight operations. The PIC must be designated before the flight and cannot transfer his or her designation for the duration of the flight. The PIC must ensure that the VO can perform the duties required of the VO.

7. This exemption and all documents needed to operate the UAS and conduct its operations in accordance with the conditions and limitations stated in this grant of exemption, are hereinafter referred to as the operating documents. The operating documents must be accessible during UAS operations and made available to the Administrator upon request. If a discrepancy exists between the conditions and limitations in this exemption and the procedures outlined in the operating documents, the conditions and limitations herein take precedence and must be followed.

Otherwise, the operator must follow the procedures as outlined in its operating documents. The operator may update or revise its operating documents. It is the operator's responsibility to track such revisions and present updated and revised documents to the Administrator or any law enforcement official upon request. The operator must also present updated and revised documents if it petitions for extension or amendment to this grant of exemption. If the operator determines that any update or revision would affect the basis upon which the FAA granted this exemption, then the operator must petition for an amendment to its grant of exemption. The FAA's UAS Integration Office (AFS−80) may be contacted if questions arise regarding updates or revisions to the operating documents.

8. Any UAS that has undergone maintenance or alterations that affect the UAS operation or flight characteristics, e.g., replacement of a flight critical component, must undergo a functional test flight prior to conducting further operations under this exemption. Functional test flights may only be conducted by a PIC with a VO and must remain at least 500 feet from other people. The functional test flight must be conducted in such a manner so as to not pose an undue hazard to persons and property.

9. The operator is responsible for maintaining and inspecting the UAS to ensure that it is in a condition for safe operation.

10. Prior to each flight, the PIC must conduct a pre-flight inspection and determine the UAS is in a condition for safe flight. The pre-flight inspection must account for all potential discrepancies, e.g., inoperable components, items, or equipment. If the inspection reveals a condition that affects the safe operation of the UAS, the aircraft is prohibited from operating until the necessary maintenance has been performed and the UAS is found to be in a condition for safe flight.

11. The operator must follow the UAS manufacturer's maintenance, overhaul, replacement, inspection, and life limit requirements for the aircraft and aircraft components.

12. Each UAS operated under this exemption must comply with all manufacturer safety bulletins.

13. Under this grant of exemption, a PIC must hold either an airline transport, commercial, private, recreational, or sport pilot certificate. The PIC must also hold a current FAA airman medical certificate or a valid U.S. driver's license issued by a state, the District of Columbia, Puerto Rico, a territory, a possession, or the Federal government. The PIC must also meet the flight review requirements specified in 14 CFR § 61.56 in an aircraft in which the PIC is rated on his or her pilot certificate.

14. The operator may not permit any PIC to operate unless the PIC demonstrates the ability to safely operate the UAS in a manner consistent with how the UAS will be

operated under this exemption, including evasive and emergency maneuvers and maintaining appropriate distances from persons, vessels, vehicles and structures. PIC qualification flight hours and currency must be logged in a manner consistent with 14 CFR § 61.51(b). Flights for the purposes of training the operator's PICs and VOs (training, proficiency, and experience-building) and determining the PIC's ability to safely operate the UAS in a manner consistent with how the UAS will be operated under this exemption are permitted under the terms of this exemption. However, training operations may only be conducted during dedicated training sessions. During training, proficiency, and experience-building flights, all persons not essential for flight operations are considered nonparticipants, and the PIC must operate the UA with appropriate distance from nonparticipants in accordance with 14 CFR § 91.119.

15. UAS operations may not be conducted during night, as defined in 14 CFR § 1.1. All operations must be conducted under visual meteorological conditions (VMC). Flights under special visual flight rules (SVFR) are not authorized.

16. The UA may not operate within 5 nautical miles of an airport reference point (ARP) as denoted in the current FAA Airport/Facility Directory (AFD) or for airports not denoted with an ARP, the center of the airport symbol as denoted on the current FAA-published aeronautical chart, unless a letter of agreement with that airport's management is obtained or otherwise permitted by a COA issued to the exemption holder. The letter of agreement with the airport management must be made available to the Administrator or any law enforcement official upon request.

17. The UA may not be operated less than 500 feet below or less than 2,000 feet horizontally from a cloud or when visibility is less than 3 statute miles from the PIC.

18. If the UAS loses communications or loses its GPS signal, the UA must return to a pre-determined location within the private or controlled-access property.

19. The PIC must abort the flight in the event of unpredicted obstacles or emergencies.

20. The PIC is prohibited from beginning a flight unless (considering wind and forecast weather conditions) there is enough available power for the UA to conduct the intended operation and to operate after that for at least five minutes or with the reserve power recommended by the manufacturer if greater.

21. Air Traffic Organization (ATO) Certificate of Waiver or Authorization (COA). All operations shall be conducted in accordance with an ATO-issued COA. The exemption holder may apply for a new or amended COA if it intends to conduct operations that cannot be conducted under the terms of the attached COA.

22. All aircraft operated in accordance with this exemption must be identified by serial number, registered in accordance with 14 CFR part 47, and have identification

(N−Number) markings in accordance with 14 CFR part 45, Subpart C. Markings must be as large as practicable.

23. Documents used by the operator to ensure the safe operation and flight of the UAS and any documents required under 14 CFR §§ 91.9 and 91.203 must be available to the PIC at the Ground Control Station of the UAS any time the aircraft is operating. These documents must be made available to the Administrator or any law enforcement official upon request.

24. The UA must remain clear and give way to all manned aviation operations and activities at all times.

25. The UAS may not be operated by the PIC from any moving device or vehicle.

26. All Flight operations must be conducted at least 500 feet from all nonparticipating persons, vessels, vehicles, and structures unless:
    a. Barriers or structures are present that sufficiently protect nonparticipating persons from the UA and/or debris in the event of an accident. The operator must ensure that nonparticipating persons remain under such protection. If a situation arises where nonparticipating persons leave such protection and are within 500 feet of the UA, flight operations must cease immediately in a manner ensuring the safety of nonparticipating persons; and
    b. The owner/controller of any vessels, vehicles or structures has granted permission for operating closer to those objects and the PIC has made a safety assessment of the risk of operating closer to those objects and determined that it does not present an undue hazard.

    The PIC, VO, operator trainees or essential persons are not considered nonparticipating persons under this exemption.

27. All operations shall be conducted over private or controlled-access property with permission from the property owner/controller or authorized representative. Permission from property owner/controller or authorized representative will be obtained for each flight to be conducted.

28. Any incident, accident, or flight operation that transgresses the lateral or vertical boundaries of the operational area as defined by the applicable COA must be reported to the FAA's UAS Integration Office (AFS−80) within 24 hours. Accidents must be reported to the National Transportation Safety Board (NTSB) per instructions contained on the NTSB Web site: www.ntsb.gov.

If this exemption permits operations for the purpose of closed-set motion picture and television filming and production, the following additional conditions and limitations apply.

29. The operator must have a motion picture and television operations manual (MPTOM) as documented in this grant of exemption.

30. At least 3 days before aerial filming, the operator of the UAS affected by this exemption must submit a written Plan of Activities to the local Flight Standards District Office (FSDO) with jurisdiction over the area of proposed filming. The 3-day notification may be waived with the concurrence of the FSDO. The plan of activities must include at least the following:
    a. Dates and times for all flights;
    b. Name and phone number of the operator for the UAS aerial filming conducted under this grant of exemption;
    c. Name and phone number of the person responsible for the on-scene operation of the UAS;
    d. Make, model, and serial or N−Number of UAS to be used;
    e. Name and certificate number of UAS PICs involved in the aerial filming;
    f. A statement that the operator has obtained permission from property owners and/or local officials to conduct the filming production event; the list of those who gave permission must be made available to the inspector upon request;
    g. Signature of exemption holder or representative; and
    h. A description of the flight activity, including maps or diagrams of any area, city, town, county, and/or state over which filming will be conducted and the altitudes essential to accomplish the operation.

31. Flight operations may be conducted closer than 500 feet from participating persons consenting to be involved and necessary for the filming production, as specified in the exemption holder's MPTOM.

Unless otherwise specified in this grant of exemption, the UAS, the UAS PIC, and the UAS operations must comply with all applicable parts of 14 CFR including, but not limited to, parts 45, 47, 61, and 91.

This exemption terminates on June 30, 2017, unless sooner superseded or rescinded.

Sincerely,

/s/
John S. Duncan
Director, Flight Standards Service

UNITED STATES OF AMERICA
DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
WASHINGTON, D.C.

# IDAHO POWER COMPANY'S PETITION FOR EXEMPTION PURSUANT TO SECTION 333 OF THE FAA MODERNIZATION AND REFORM ACT OF 2012 (PUBLIC LAW 112-95, 126 STAT 11)

Submitted on March 23, 2015

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*Applicant*

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## I. SUMMARY AND BACKGROUND

Idaho Power Company ("IPC") respectfully requests an expedited exemption from Federal Aviation Regulations ("FARs") pursuant to Section 333 of the FAA Modernization and Reform Act of 2012, to operate a small unmanned airsystem ("sUAS"). IPC's requested exemption would support IPC's application for a civil, commercial Certificate of Authorization ("COA") to use a MikroKopter sUAS over sparsely populated and unpopulated areas in Idaho for low altitude environmental research and resource monitoring, including monitoring of salmon spawning activity in the Snake River as part of IPC's efforts to comply with the Environmental Species Act ("ESA") and to support hydro-facility relicensing required by the Federal Energy Regulatory Commission ("FERC").[1]

### A. Applicant Idaho Power Company

IPC, an electric utility company headquartered in Boise, Idaho, is engaged in the generation, transmission, distribution, sale and purchase of electric energy. Since 1916, IPC has provided safe, reliable, responsible, fair-priced service to its customers. In addition to providing energy, IPC cares for the environment. Some of IPC's environmental work – including monitoring of salmon spawning activity and vegetation mapping – requires aerial surveys in

[1] As described in more detail in this Petition, IPC requests exemption from the following regulations: 14 C.F.R. Part 21, Subpart H, §§ 21.173 and 21.175(a) and (b) (airworthiness certificates); 14 C.F.R. § 45.23(a) and (b) (display of marks); 14 C.F.R. § 45.27(a) (location of marks); 14 C.F.R. § 45.29(a), (b)(3), (c), (d), (e), and (f) (size of marks); 14 C.F.R. § 61.113(a) and (b) (private pilot privileges and limitations); 14 C.F.R. § 61.133(a) (commercial pilot privileges and limitations); 14 C.F.R. § 91.7(a) (civil aircraft airworthiness); 14 C.F.R. § 91.9(a), (b), and (c) (civil aircraft flight manual); 14 C.F.R. § 91.109(a) (flight instruction); 14 C.F.R. § 91.119 (minimum safe altitudes); 14 C.F.R. § 91.121 (altimeter settings); 14 C.F.R. § 91.151(b) (fuel requirements); 14 C.F.R. § 91.203 (civil aircraft certifications); 14 C.F.R. § 91.405(a) (required maintenance); 14 C.F.R. § 91.407(a)(1) (operation after maintenance, rebuilding or alteration); 14 C.F.R. § 91.409(a) (inspections); and 14 C.F.R. § 91.417(a) and (b) (maintenance records). IPC also requests the exemptions that are necessary to such approval pursuant to 49 U.S.C. § 44701(f), and 14 C.F.R. § 11.81.

rugged, isolated, wilderness terrain along the Snake River in Idaho, for which IPC seeks to use sUAS.

### B. Idaho Power Company's Proposed sUAS

IPC proposes to use a MikroKopter sUAS, built and distributed by Quadcopter, LLC, in Montana. As set forth in more detail in the MikroKopter Pilots Operating Manual, attached hereto as Exhibit 1 (translated from the original German), the MikroKopter sUAS consists of a lightweight hexa-rotor craft (Hexacopter), a laptop computer-based ground control system, and a 2.4 GHz radio control transmitter commonly associated with recreational models. The Hexacopter has a ten inch diameter central hub, protected by a plastic dome, that contains all of the major electrical components, including microchips for flight and navigation control, onboard GPS, flight recording, multi-axis accelerometers (for auto-stabilization), and remote control radio receivers. Six regularly spaced aluminum arms radiate out horizontally from the central hub. A small brushless motor and propeller blade are attached to the distal end of each arm. Along the bottom of the forward arm are a set of bright red LED lights, and along two of the rear facing legs are sets of bright blue LED lights. These lights are on when the sUAS is under power, enhancing visibility of the sUAS for personnel on the ground.

Directly beneath the central hub is a camera mount that can hold a payload of approximately 150 grams. The Hexacopter has an overall diameter of approximately 2.3 feet, stands about one foot high, and weighs slightly less than five pounds (with camera payload). The Hexacopter is battery operated and can maintain flight for approximately 20 minutes on a full charge. Typical cruising speed over the ground is approximately ten nautical miles per hour, and maximum speed is approximately 35 nautical miles per hour. The Hexacopter carries onboard either a GoPro video or a small Pentax still camera.

### C. Idaho Power Company's Proposed Use of sUAS

sUAS will provide IPC a safer and more efficient means to collect low altitude, precision video or photogrammetry to support and enhance IPC's monitoring of environmental resource programs. The high-resolution data obtained by a sUAS can be used to monitor ESA-listed salmon spawning activity in hard-to-access or environmentally sensitive areas, assess changes in vegetation type and cover in sensitive areas, catalogue archaeological resources, and map aquatic, littoral, and terrestrial habitat for sensitive species without the use of helicopters or other vehicles that may have more impact than sUAS. Helicopters are not only more expensive than sUAS, they are also more dangerous, as demonstrated by a 2010 helicopter crash in Idaho in a mission similar to IPC's that resulted in the loss of life of the pilot and biologists on board. sUAS would allow IPC biologists and resource managers to remotely obtain high quality data, while increasing the overall safety of personnel, potentially reducing or eliminating impacts to the environment, and reducing operation and maintenance costs.

IPC proposes to use sUAS that weigh five or fewer pounds, operate at a speed of ten nautical miles per hour and no more than 35 nautical miles per hour, and contain built-in safety features. In addition, IPC proposes to use the sUAS at low altitudes no more than 400 feet above ground level ("AGL"), away from airports or densely populated areas, on property that is owned or controlled by IPC (or with the permission of the property owner), in sparsely populated or unpopulated areas. IPC would operate the sUAS within the visual line of sight of the operator, during the daytime, and under controlled conditions.

Given the sUAS's light weight, flight performance, fully qualified operators, and strict operation under the guidelines established in FAA Policy Order 8900.227 and outlined in this Petition, IPC's operations will have a level of safety equivalent to or greater than manned aircraft performing similar missions. The grant of this requested exemption is in the public interest

based on the clear direction in Section 333 of the Reform Act, the environmental benefits and reduced environmental impact, enhanced safety, and cost savings associated with transitioning to sUAS for low altitude environmental resource monitoring and mapping.

The next salmon spawning season on the Snake River begins in October of 2015. Accordingly, IPC respectfully requests that the Administration grant the requested exemption without delay.[2]

## II. RELEVANT AUTHORITY

The following laws, rules, and policy order provide the basis for IPC's requested exemption:

- Section 333 of the FAA Modernization and Reform Act of 2012 (the "Reform Act")
- 49 U.S.C. § 44701(f)
- 14 C.F.R. Part 11, Subpart A, Section 11.61(b)
- FAA Policy Order 8900.227, Paragraph 16

### A. Section 333.

Section 333 of the Reform Act is a pathway for "expedited operational authorization." Section 332(b)(1). Section 333 expressly grants the FAA, through the Secretary of Transportation, the authority to "determine if certain unmanned aircraft systems may operate safely in the national airspace system before completion of the plan and rulemaking required by" other sections of the Reform Act.

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[2] Under 14 C.F.R. § 11.87, the Administration need not publish a summary of IPC's Petition and request comment if IPC presents or the Administration finds good cause why the Administration should not delay action on IPC's Petition. Here, IPC's petition is filed seven months before the October 2015 salmon spawning season and is therefore timely. Delaying action on IPC's Petition until after salmon spawning season would affect IPC adversely. In addition, the relief IPC requests is identical to various exemptions the Administration has previously granted, as described herein. Finally, granting the Petition would set a precedent for other petitions seeking to use sUAS for research and monitoring of natural resources.

Section 333(b)(1) outlines the factors that the Administration shall use to determine whether UAS may be operated safely in the national airspace system: size, weight, speed, operational capability, proximity to airports and populated areas, and operation within visual line of sight. In addition, Section 333(b)(2) provides the Administration with the discretion to determine that a certificate of waiver, certificate of authorization, or airworthiness certification is not required to operate sUAS that are found to be appropriate under Section 333(b)(1). Finally, Section 333(c) allows the Administration to establish requirements for safe operation of the sUAS determined to be able to be operated safely in the national airspace system.

**B. Section 44701(f).**

In addition to its specific authority related to authorizing sUAS operation under Section 333, the Administration has general authority to grant exemptions from its safety requirements and minimum standards if the Administration finds that the exemption is in the public interest. 49 U.S.C. § 44701(f). Administration regulations set forth the information that must be included in a petition for exemption: (1) the applicant's name and mailing address; (2) the regulations from which the applicant seeks exemption; (3) the extent of relief sought and why; (4) the reasons why granting the request would be in the public interest and how it would benefit the public as a whole; and (5) the reasons why granting the exemption would not adversely affect safety, or how the exemption would provide a level of safety at least equal to the rule from which the applicant seeks exemption. 14 C.F.R. § 11.81.

**C. Other Authority.**

In addition, Part 11 of 14 C.F.R., Subpart A, § 11.61(b), provides the FAA the authority to grant exemptions to any current regulation of 14 C.F.R. FAA Policy Order 8900.227, paragraph 16, discusses sUAS pilot qualifications, and notes that, if certain conditions are met, a current pilot certificate is not required.

## III. BASIS FOR PETITION

### A. Name and Address of the Applicant.

The name and address of the Applicant is:

Idaho Power Company
1221 West Idaho Street
Boise, Idaho 83702

The point of contact for this Petition, and specific contact information is:

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### B. Specific Sections of 14 C.F.R. From Which Idaho Power Company Seeks Exemption.[3]

#### 1. IPC Seeks Exemption From the Requirements of Part 21, Subpart H: Airworthiness Certificates, §§ 21.173, and 21.175(a) and (b) – Airworthiness Certificates.

Part 21, Subpart H: Airworthiness Certificates, Sections 21.173 and 21.175(a) and (b), provides:

Section 21.173, entitled *Eligibility*, states:

> Any registered owner of a U.S.registered aircraft (or the agent of the owner) may apply for an airworthiness certificate for that aircraft. An application for an airworthiness certificate must be made in a form and manner acceptable to the FAA, and may be submitted to any FAA office.

Section 21.175(a) and (b), entitled *Airworthiness certificates: classification*, states:

[3] IPC has attempted to identify the applicable regulations for which an exemption is required for its proposed sUAS use. To the extent that the Administration determines that any other safety regulations might apply to IPC's proposed use, IPC further requests that this Petition be deemed to seek an exemption from those requirements.

(a) Standard airworthiness certificates are airworthiness certificates issued for aircraft type certificated in the normal, utility, acrobatic, commuter, or transport category, and for manned free balloons, and for aircraft designated by the FAA as special classes of aircraft.

(b) Special airworthiness certificates are primary, restricted, limited, light-sport, and provisional airworthiness certificates, special flight permits, and experimental certificates.

**2. IPC Seeks Exemption From the Requirements of § 45.23(a) and (b) – Display of Marks.**

Section 45.23, entitled *Display of marks; general*, subsections (a) and (b), provides:

(a) Each operator of an aircraft must display on that aircraft marks consisting of the Roman capital letter "N" (denoting United States registration) followed by the registration number of the aircraft. Each suffix letter used in the marks displayed must also be a Roman capital letter.

(b) When marks include only the Roman capital letter "N" and the registration number is displayed on limited, restricted or light-sport category aircraft or experimental or provisionally certificated aircraft, the operator must also display on that aircraft near each entrance to the cabin, cockpit, or pilot station, in letters not less than 2 inches nor more than 6 inches high, the words "limited," "restricted," "light-sport," "experimental," or "provisional," as applicable.

**3. IPC Seeks Exemption From the Requirements of § 45.27(a) – Location of Marks.**

Section 45.27, entitled *Location of marks; nonfixed-wing aircraft*, subsection (a), provides:

(a) *Rotorcraft.* Each operator of a rotorcraft must display on that rotorcraft horizontally on both surfaces of the cabin, fuselage, boom, or tail the marks required by § 45.23.

**4. IPC Seeks Exemption From the Requirements of § 45.29(a), (b)(3), (c), (d), (e), and (f) – Size of Marks.**

Section 45.29, entitled *Size of marks* (for subsections noted above), provides:

> (a) Except as provided in paragraph (f) of this section, each operator of an aircraft must display marks on the aircraft meeting the size requirements of this section.
>
> (b) *Height.* Except as provided in paragraph (h) of this part, the nationality and registration marks must be of equal height and on:
>
> ***
>
> (3) Rotorcraft, must be at least 12 inches high, except that rotorcraft displaying before April 18, 1983, marks required by § 45.29(b)(3) in effect on April 17, 1983, and rotorcraft manufactured on or after April 18, 1983, but before December 31, 1983, may display those marks until the aircraft is repainted or the marks are repainted, restored, or changed.
>
> (c) *Width.* Characters must be two-thirds as wide as they are high, except the number "1", which must be one-sixth as wide as it is high, and the letters "M" and "W" which may be as wide as they are high.
>
> (d) *Thickness.* Characters must be formed by solid lines one-sixth as thick as the character is high.
>
> (e) *Spacing.* The space between each character may not be less than one-fourth of the character width.
>
> (f) If either one of the surfaces authorized for displaying required marks under § 45.25 is large enough for display of marks meeting the size requirements of this section and the other is not, full size marks must be placed on the larger surface. If neither surface is large enough for full size marks, marks as large as practicable must be displayed on the larger of the two surfaces. If no surface authorized to be marked by § 45.27 is large enough for full-size marks, marks as large as practicable must be placed on the largest of the authorized surfaces. However, powered parachutes and weight-shift-control aircraft must display marks at least 3 inches high.

**5. IPC Seeks Exemption From the Requirements of § 61.113(a) and (b) – Private Pilot Privileges and Limitations.**

Section 61.113, entitled *Private pilot privileges and limitations: Pilot in command,* subsections (a) and (b), provides:

> (a) Except as provided in paragraphs (b) through (h) of this section, no person who holds a private pilot certificate may act as a pilot in command of an aircraft that is carrying passengers or property for compensation or hire; nor may that person, for compensation or hire; nor may that person, for compensation or hire, act as pilot in command of an aircraft.
>
> (b) A private pilot may, for compensation or hire, act as pilot in command of an aircraft in connection with any business or employment if:
>
> (1) The flight is only incidental to that business or employment; and
>
> (2) The aircraft does not carry passengers or property for compensation or hire.

**6. IPC Seeks Exemption From the Requirements of § 61.133(a) – Commercial Pilot Privileges and Limitations.**

Section 61.133, entitled *Commercial pilot privileges and limitations*, subsection (a), provides:

> (a) Privileges:
>
> (1) *General.* A person who holds a commercial pilot certificate may act as pilot in command in command of an aircraft:
>
> (i) Carrying persons or property for compensation or hire, provided the person is qualified in accordance with this part and with the applicable parts of this chapter that apply to the operation; and
>
> (ii) For compensation or hire, provided the person is qualified in accordance with this part and with the applicable parts of this chapter that apply to the operation.

**7. IPC Seeks Exemption From the Requirements of § 91.7(a) – Civil Aircraft Airworthiness.**

Section 91.7, entitled *Civil aircraft airworthiness*, subsection (a), provides:

> (a) No person may operate a civil aircraft unless it is in an airworthy condition.

**8. IPC Seeks Exemption From the Requirements of § 91.9(a), (b), and (c) – Civil Aircraft Flight Manual, Marking and Placard.**

Section 91.9, entitled *Civil aircraft flight manual, marking, and placard requirements*, subsections (a), (b), and (c), provides:

> (a) Except as provided in paragraph (d) of this section, no person may operate a civil aircraft without complying with the operating limitations specified in the approved Airplane or Rotorcraft Flight Manual, markings, and placards, or as otherwise prescribed by the certificating authority of the country of registry.
>
> (b) No person may operate a U.S.-registered civil aircraft:
>
> (1) For which an Airplane or Rotorcraft Flight Manual is required by § 21.5 of this chapter unless there is available in the aircraft a current, approved Airplane or Rotorcraft Flight Manual or the manual provided for in § 121.141(b); and
>
> (2) For which an Airplane or Rotorcraft Flight Manual is not required by § 21.5 of this chapter, unless there is available in the aircraft a current approved Airplane or Rotorcraft Flight Manual, approved manual material, markings, and placards, or any combination thereof.
>
> (c) No person may operate a U.S.-registered civil aircraft unless that aircraft is identified in accordance with part 45 of this chapter.

**9. IPC Seeks Exemption From the Requirements of § 91.109(a)– Flight Instruction.**

Section 91.109, entitled *Flight instruction; Simulated instrument flight and certain flight tests*, subsection (a), provides:

> (a) No person may operate a civil aircraft (except a manned free balloon) that is being used for flight instruction unless that aircraft has fully functioning dual controls. However, instrument flight instruction may be given in an airplane that is equipped with a single, functioning throwover control wheel that controls the elevator and ailerons, in place of fixed, dual controls, when:
>
> (1) The instructor has determined that the flight can be conducted safely; and
>
> (2) The person manipulating the controls has at least a private pilot certificate with appropriate category and class ratings.

**10. IPC Seeks Exemption From the Requirements of § 91.119 – Minimum Safe Altitudes.**

Section 91.119, entitled *Minimum safe altitudes: General*, provides:

> Except when necessary for takeoff or landing, no person may operate an aircraft below the following altitudes:
>
> (a) *Anywhere.* An altitude allowing, if a power unit fails, an emergency landing without undue hazard to persons or property on the surface.
>
> (b) *Over congested areas.* Over any congested area of a city, town, or settlement, or over any open air assembly of persons, an altitude of 1,000 feet above the highest obstacle within a horizontal radius of 2,000 feet of the aircraft.
>
> (c) *Over other than congested areas.* An altitude of 500 feet above the surface, except over open water or sparsely populated areas. In those cases, the aircraft may not be operated closer than 500 feet to any person, vessel, vehicle, or structure.
>
> (d) *Helicopters, powered parachutes, and weight-shift-control aircraft.* If the operation is conducted

without hazard to persons or property on the surface:

(1) A helicopter may be operated at less than the minimums prescribed in paragraph (b) or (c) of this section, provided each person operating the helicopter complies with any routes or altitudes specifically prescribed for helicopters by the FAA; and

(2) A powered parachute or weight-shift-control aircraft may be operated at less than the minimums prescribed in paragraph (c) of this section.

**11. IPC Seeks Exemption From the Requirements of § 91.121 – Altimeter Settings.**

Section 91.121, entitled *Altimeter settings*, subsection (a), provides:

(a) Each person operating an aircraft shall maintain the cruising altitude or flight level of that aircraft, as the case may be, by reference to an altimeter that is set, when operating:

(1) Below 18,000 feet MSL, to

(i) The current reported altimeter setting of a station along the route and within 100 nautical miles of the aircraft;

(ii) If there is no station within the area prescribed in paragraph (a)(1)(i) of this section, the current reported altimeter setting of an appropriate available station; or

(iii) In the case of an aircraft not equipped with a radio, the elevation of the departure airport or an appropriate altimeter setting available before departure[.]

**12. IPC Seeks Exemption From the Requirements of § 91.151(b) – Fuel Requirements.**

Section 91.151, entitled *Fuel requirements for flight in VFR conditions*, subsection (b), provides:

> (b) No person may begin a flight in a rotorcraft under VFR conditions unless (considering wind and forecast weather conditions) there is enough fuel to fly to the first point of intended landing and, assuming normal cruising speed, to fly after that for at least 20 minutes.

**13. IPC Seeks Exemption From the Requirements of § 91.203 – Display of Civil Aircraft Certifications.**

Section 91.203, entitled *Civil aircraft: Certifications required*, provides:

> (a) Except as provided in § 91.715, no person may operate a civil aircraft unless it has within it the following:
>
> (1) An appropriate and current airworthiness certificate. Each U.S. airworthiness certificate used to comply with this subparagraph (except a special flight permit, a copy of the applicable operations specifications issued under § 21.197(c) of this chapter, appropriate sections of the air carrier manual required by parts 121 and 135 of this chapter containing that portion of the operations specifications issued under § 21.197(c), or an authorization under § 91.611) must have on it the registration number assigned to the aircraft under part 47 of this chapter. However, the airworthiness certificate need not have on it an assigned special identification number before 10 days after that number is first affixed to the aircraft. A revised airworthiness certificate having on it an assigned special identification number that has been affixed to an aircraft, may only be obtained upon application to an FAA Flight Standards district office.
>
> (2) An effective U.S. registration certificate issued to its owner or, for operation within the United States, the second copy of the Aircraft registration Application as provided for in § 47.31(c), or a

registration certification issued under the laws of a foreign country.

(b) No person may operate a civil aircraft unless the airworthiness certificate required by paragraph (a) of this section or a special flight authorization issued under § 91.715 is displayed at the cabin or cockpit entrance so that it is legible to passengers or crew.

(c) No person may operate an aircraft with a fuel tank installed within the passenger compartment or a baggage compartment unless the installation was accomplished pursuant to part 43 of this chapter, and a copy of FAA Form 337 authorizing that installation is on board the aircraft.

(d) No person may operate a civil airplane (domestic or foreign) into or out of an airport in the United States unless it complies with the fuel venting and exhaust emissions requirements of part 34 of this chapter.

**14. IPC Seeks Exemption From the Requirement of § 91.405(a) – Required Maintenance.**

Section 91.405, entitled *Maintenance required*, subsection (a), provides:

(a) Each owner or operator of an aircraft:

(b) Shall have that aircraft inspected as prescribed in subpart E of this part and shall between required inspections, except as provided in paragraph (c) of this section, have discrepancies repaired as prescribed in part 43 of this chapter[.]

**15. IPC Seeks Exemption From the Requirements of § 91.407(a)(1) – Operation After Maintenance, Rebuilding or Alteration.**

Section 91.407, entitled *Operation after maintenance, preventive maintenance, rebuilding, or alteration*, subsection (a)(1), provides:

(a) No person may operate any aircraft that has undergone maintenance, preventive maintenance, rebuilding, or alteration unless:

(i) It has been approved for return to service by a person authorized under § 43.7 of this chapter[.]

**16. IPC Seeks Exemption From the Requirements of § 91.409(a) - Inspections.**

Section 91.409, entitled *Inspections*, subsection (a), provides:

> (a) Except as provided in paragraph (c) of this section, no person may operate an aircraft unless, within the preceding 12 calendar months, it has had:
>
> (1) An annual inspection in accordance with part 43 of this chapter and has been approved for return to service by a person authorized by § 43.7 of this chapter; or
>
> (2) An inspection for the issuance of an airworthiness certificate in accordance with part 21 of this chapter.

**17. IPC Seeks Exemption From the Requirements of § 91.417(a) and (b) – Maintenance Records.**

Section 91.417, entitled *Maintenance records*, subsections (a) and (b), provides:

> (a) Except for work performed in accordance with §§ 91.411 and 91.413, each registered owner or operator shall keep the following records for the periods specified in paragraph (b) of this section:
>
> (1) Records of the maintenance, preventive maintenance, and alteration and records of the 100-hour, annual, progressive, and other required or approved inspections, as appropriate, for each aircraft (including the airframe) and each engine, propeller, rotor, and appliance of an aircraft. The records must include:
>
> (i) A description (or reference to data acceptable to the Administrator) of the work performed; and
>
> (ii) The date of completion of the work performed; and
>
> (iii) The signature and certificate number of the person approving the aircraft for return to service.

(2) Records containing the following information:

(i) The total time in service of the airframe, each engine, each propeller, and each rotor.

(ii) The current status of life-limited parts of each airframe, engine, propeller, rotor, and appliance.

(iii) The time since last overhaul of all items installed on the aircraft which are required to be overhauled on a specified time basis.

(iv) The current inspection status of the aircraft, including the time since the last inspection required by the inspection program under which the aircraft and its appliances are maintained.

(v) The current status of applicable airworthiness directives (AD) and safety directives including, for each, the method of compliance, the AD or safety directive number and revision date. If the AD or safety directive involves recurring action, the time and date when the next action is required.

(vi) Copies of the forms prescribed by § 43.9(d) of this chapter for each major alteration to the airframe and currently installed engines, rotors, propellers, and appliances.

(b) The owner or operator shall retain the following records for the periods prescribed:

(1) The records specified in paragraph (a)(1) of this section shall be retained until the work is repeated or superseded by other work or for 1 year after the work is performed.

(2) The records specified in paragraph (a)(2) of this section shall be retained and transferred with the aircraft at the time the aircraft is sold.

(3) A list of defects furnished to a registered owner or operator under § 43.11 of this chapter shall be retained until the defects are repaired and the aircraft is approved for return to service.

### C. The Extent of Relief Idaho Power Company Seeks and the Reason Idaho Power Company Seeks Relief From Specific Parts of the Federal Aviation Regulations

#### 1. Extent of relief IPC seeks and the reason IPC seeks relief from Part 21, Subpart H: Airworthiness Certificates, §§ 21.173 and 21.175(a) and (b) – Airworthiness Certificates.

Part 21 establishes procedural requirements for certifications under Section 44704, including airworthy certificates. Both Sections 333 and 44701(b) authorize the Administration to exempt aircraft from airworthiness certification under this Part based upon consideration of its size, weight, speed, operational capability, and proximity to airports and populated areas. *See* Section 333.

An exemption from the certificate of airworthiness requirement is reasonable here given that the sUAS IPC intends to use is not of a type that is typically certificated (e.g., normal, utility, acrobatic, commuter, or transport category). In addition, the sUAS does not fit the criteria for craft that are typically granted a special airworthiness certificate (e.g., light-sport, experimental, etc.). Therefore, IPC seeks relief from this requirement.

#### 2. Extent of relief IPC seeks and the reason IPC seeks relief from § 45.23(a) and (b) – Display of Marks.

Because the size of the sUAS IPC proposes to use is small and does not have a conventional fuselage, cabin, cockpit, or main aircraft body on which the required marking could be displayed, IPC seeks relief from Section 45.23, subsections (a) and (b).

#### 3. Extent of relief IPC seeks and the reason IPC seeks relief from § 45.27(a) – Location of Marks.

As discussed in item 2 above, the size of the sUAS IPC proposes to use is small and does not have a conventional fuselage, cabin, cockpit, or main aircraft body on which the required marking could be displayed. Therefore, IPC seeks relief from Section 45.27(a).

**4. Extent of relief IPC seeks and the reason IPC seeks relief from § 45.29(a), (b)(3), (c), (d), (e), and (f) – Size of Marks.**

As discussed in items 2 and 3 above, the size of the sUAS IPC proposes to use is small and does not have a conventional fuselage, cabin, cockpit, or main aircraft body on which the required marking could be displayed. The sUAS does not have enough surface area to comply with the intent of Section 45.29(a), (b)(3), (c), (d), (e), or (f). Therefore, IPC seeks relief from this section.

**5. Extent of relief IPC seeks and the reason IPC seeks relief from § 61.113(a) and (b) – Private Pilot Privileges and Limitations.**

The sUAS IPC intends to use will be used for incidental purposes of business or employment, namely environmental resource monitoring projects as part of IPC's efforts to comply with the ESA and to support hydro-facility relicensing required by FERC. Because the sUAS cannot carry passengers or property, but will be operated in accordance with FAA Order 8900.227, paragraph 16(c)(2)(c), IPC seeks relief from Section 61.113(a) and (b).

**6. Extent of relief IPC seeks and the reason IPC seeks relief from § 61.133(a) – Commercial Pilot Privileges and Limitations.**

Section 61.133 describes the privileges associated with holding a commercial pilot certificate. The sUAS IPC intends to use will be used for incidental purposes of business or employment, namely environmental resource monitoring projects as part of IPC's efforts to comply with the ESA and to support hydro-facility relicensing required by FERC. Because the sUAS cannot carry passengers or property, and will be operated in accordance with FAA Order 8900.227, paragraph 16(c)(2)(c), IPC seeks relief from Section 61.133(a).

**7. Extent of relief IPC seeks and the reason IPC seeks relief from § 91.7(a) – Civil Aircraft Airworthiness.**

IPC seeks relief from Section 91.7(a) to the extent required to allow IPC operators to determine that IPC's intended sUAS is in an airworthy condition prior to every flight.

Airworthiness will be determined by complying with IPC operating manual (*see* Exhibit 1), and by complying with a pre-flight and post-flight checklist for each flight, attached hereto as Exhibits 2 and 3, respectively, including before first flight and after major maintenance or upgrades. Therefore, IPC seeks relief from this requirement.

**8. Extent of relief IPC seeks and the reason IPC seeks relief from § 91.9(a), (b), and (c) – Civil Flight Manual, Markings and Placard.**

IPC seeks exemption from Section 91.9(a), (b) and (c) which refer to maintaining the presence of flight manuals, specific placards, and specific markings on and onboard aircraft. The intent of these requirements is to ensure that the aircraft is in an airworthy condition, that flight manuals are available to the aircrew while operating the aircraft, and that aircraft may be readily identified. Because of the size and configuration of the sUAS IPC will use, it is not possible to carry such a flight manual on the sUAS. Therefore, IPC seeks relief from this requirement.

**9. Extent of relief IPC seeks and the reason IPC seeks relief from § 91.109(a) – Flight Instruction.**

IPC seeks exemption from Section 91.109 concerning dual flight controls used during flight instruction. Flight control for the sUAS IPC intends to use for operations is accomplished through direct control from a standard hand-held 2.4 GHz radio control transmitter, pre-programmed semi-autonomous auto pilot, or a lap top computer ground control station. None of these components offers a simultaneous second set of controls. Therefore, IPC seeks relief from this requirement.

**10. Extent of relief IPC seeks and the reason IPC seeks relief from § 91.119 – Minimum Safe Altitudes.**

Section 91.119, concerning minimum safe altitudes, generally requires that a minimum safe altitude should be 500 feet above the ground surface, or no closer than 500 feet to personnel, vessels, vehicles, or structures. This section allows for a helicopter to operate at less than those

minimum altitudes under certain conditions. Because IPC intends to operate a sUAS at elevations less than 400 feet AGL, relief from this regulation is requested.

**11. Extent of relief IPC seeks and the reason IPC seeks relief from § 91.121 – Altimeter Settings.**

Section 91.121 requires that manned aircraft maintain safe altitudes by referencing an altimeter setting available within 100 nautical miles of the aircraft. The sUAS IPC intends to use will be flown within visual sight of the pilot in command ("PIC") and visual observer ("VO"), and will be operated below 400 feet AGL. Therefore, it will not be necessary to maintain hemispherical cruising altitudes in order to de-conflict with other aircraft. Therefore, IPC seeks relief from this requirement.

**12. Extent of relief IPC seeks and the reason IPC seeks relief from § 91.151(b) – Fuel Requirements.**

Section 91.151(b) provides that no person may begin a flight in an airplane under day-VFR conditions unless there is enough fuel to fly to the first point of intended landing and to fly after that for at least 30 minutes. The purpose of this section is to provide a reserve of energy as a safety buffer for go-arounds and other landing delays. The sUAS IPC intends to use is battery operated and the maximum duration of flight from a full battery charge is approximately 20 minutes. IPC's intended operations generally require less than 10 minutes of flight time (50% of available flight time), leaving an additional 10 minutes of reserve energy to correct or alleviate unforeseen developments. Therefore, IPC seeks relief from this requirement.

**13. Extent of relief IPC seeks and the reason IPC seeks relief from § 91.203 – Display of Civil Aircraft Certifications.**

The sUAS that IPC intends to use will not have a traditional airworthiness certificate. In addition, the sUAS does not have a cabin or cockpit entrance, will not carry a pilot, crew or passengers, does not have a fuel tank, and will not be operating out of an airport. It would not be

practicable to carry or display registration documents on the sUAS. Accordingly, relief from Section 91.203 is warranted.

#### 14. Extent of relief IPC seeks and the reason IPC seeks relief from §§ 91.405(a), 91.407(a)(1), 91.409(a), and 91.417(a) and (b) – Required Maintenance.

These sections set forth requirements for repairs and maintenance of aircraft, specifically aircraft inspections, approvals by authorized personnel, and record keeping. IPC requests relief from these requirements because they apply only to aircraft with an airworthiness certificate, not to IPC's proposed operation of sUAS, and IPC's sUAS will be maintained by the operator pursuant to the manufacturer's specifications, or, when necessary, by the manufacturer.

### D. Granting Idaho Power Company's Request Would Be In The Public Interest and Would Benefit the Public as a Whole

Granting IPC's petition will provide significant benefits to the public, the environment, IPC, and its employees and customers by allowing IPC to safely, efficiently, and economically perform aerial acquisition of data for research and monitoring of environmental resources, in support of hydro-facility relicensing required by FERC and of the Endangered Species Act. The use of sUAS would decrease congestion of the national airspace, reduce pollution, and provide benefits to the economy. These benefits will be realized without privacy implications.

#### 1. Public Benefit from the Aerial Acquisition of Data.

The commercial use of sUAS for acquiring aerial data for research and monitoring of natural resources – including salmon spawning surveys along the Hells Canyon Reach of the Snake River – will be of significant benefit to the public. This data supports critical needs under the Endangered Species Act and FERC hydro relicensing associated with the continued operation of private hydroelectric facilities, such as those owned and operated by IPC. FERC relicensing requirements for hydro-facilities generally ensure the stewardship responsibilities of private

entities that benefit from the use of public natural resources. Traditional methods for acquiring this data include using manned aircraft at higher elevations, resulting in lower resolution of data, and personnel on the ground, which reduces the ability to cover large areas efficiently. Using sUAS for data acquisition allows for imagery collection at much lower altitudes than manned aircraft, which provides an overall increase in the resolution of critical data. It also allows for more precise control of the data collection, and the ability to review data quickly to ensure that the proper information is being accessed. Moreover, using sUAS provides a perspective that cannot be achieved by use of either traditional manned aircraft or personnel on the ground. Finally, the use of sUAS also provides for opportunity to interact with several federal, state, tribal, and other public and private entities on cooperative projects.

**2. Public Benefit from Decreased Congestion of the NAS.**

The sUAS IPC intends to use is small, lightweight, and operates on battery power. It is safer and more efficient and economical than manned aircraft, such as helicopters, traditionally used to obtain aerial imagery. An exemption would reduce the amount of manned aircraft in the NAS, reduce noise and air pollution, and increase the safety for people and property in the air and on the ground. An exemption would also help alleviate congestion around local airports, caused by arriving, loitering, and departing aircraft. A reduction of manned aircraft conducting aerial missions would also result in a reduced management load handled by air traffic control during ground, takeoff, departure, arrival, loitering, and landing phases of flight operations.

**3. Public Benefit with Respect to Safety.**

Conducting aerial data acquisition with a sUAS, instead of traditional manned aircraft, would greatly benefit the public by reducing or eliminating several safety risks. Because the sUAS IPC intends to use is small, lightweight, and operates on electric battery power, it would eliminate air pollution, and significantly reduce noise pollution generated by traditional aerial

survey flight operations. The sUAS is an environmentally conscious alternative to large, traditionally used manned aircraft (fixed wing or rotorcraft) that burn fossil fuel.

The use of sUAS for IPC's environmental resources monitoring programs, including salmon spawning surveys along the Snake River, substantially reduces or eliminates risk to safety and life of personnel. Even when operated under strict safety guidelines, traditional manned aircraft, both fixed-wing and rotor craft, can and do fail during natural resource monitoring projects similar to IPC's, often resulting in severe personal injury, or death to personnel involved in the operations. (*See, e.g.*, NTSB Reports SEA99FA013, WPR10FA440, and SEA01FA100.)

A recent helicopter crash in Idaho during a natural resource monitoring mission caused IPC to seriously review its monitoring operations, and to explore new technologies that would reduce or eliminate risks to personnel and property. *See* NTSB report WPR10FA440. The purpose of that flight was to conduct salmon spawning surveys similar to IPC's program. The crash occurred on the Clearwater River in northern Idaho, near the site of IPC's monitoring program. The accident killed everyone onboard – two biologists and the pilot. It also completely destroyed the helicopter and damaged property on the ground (*see* Figure 1). IPC believes that use of sUAS in IPC's environmental resource monitoring program will prevent these types of deadly accidents. Time is of the essence because IPC is scheduled to conduct its next monitoring project in September and October 2015, when the salmon spawning season begins.

Figure 1. Photograph shows the helicopter crash site where two Idaho Fish and Game biologists and their pilot were killed during a salmon spawning survey, near Kamiah, Idaho, August 2010 due to an apparent mechanical malfunction (Photo from Kyle Mills, Lewiston

Tribune), *see* http://missoulian.com/news/state-and-regional/killed-when-fish-and-game-helicopter-crashes-in-kamiah-idaho/article_fed8a14e-b54c-11df-bf1a-001cc4c002e0.html.

Because the sUAS IPC would use for its surveys carries no pilot, crew, or passengers, these types of safety risks would be completely eliminated. In addition, because the sUAS is lightweight (< 5.0 pounds with camera payload), and carries no fuel, if an accident ever were to occur, there is a significantly lower risk of collateral damage to personnel or property on the ground or in the air as compared to manned aircraft that typically conduct aerial data acquisition.

**4. Public Benefit with Respect to Economy.**

In addition to being safe and efficient, the sUAS is also an economical alternative to using manned aircraft to collect natural resources monitoring data. By reducing the cost of operations, IPC can remain competitive and profitable, and can reduce costs to its customers.

### 5. Privacy Issues.

sUAS would take the place of manned aircraft that, for decades, have flown similar environmental research and monitoring missions. Just as the manned aircraft operations pose no privacy issues, so too the sUAS carries little risk of any invasion of privacy. IPC's operations will occur over remote, unpopulated areas along the Snake River in Idaho, as well as over IPC's private property, or other private property with the owner's explicit permission. Figure 2 shows the general area where the IPC salmon spawning surveys take place, and Figures 3, 4, and 5 show typical, isolated wilderness terrain in the area where IPC's surveys occur.

### 6. Integration of sUAS With National Airspace.

The requested use presents a compelling case for the Administration moving forward with efforts to integrate sUAS into the national airspace system as required by Section 333. The public has a significant interest in efficient and safe environmental research and monitoring, and IPC has proposed using sUAS to further this public interest in a way that is at least as safe as operation of aircraft under existing regulations. IPC's request therefore provides the Administration an appropriate vehicle to further Congress' mandate to expedite integration of sUAS. In addition, IPC's operational experience resulting from the use of sUAS in these operations may be valuable to the Administration in developing comprehensive rules governing sUAS for the electric and other industries involved in natural resource monitoring projects.

Figure 2. General map of the lower Snake River, showing the regional area where the IPC salmon spawning surveys occur (enclosed in the red polygon), and the isolation from populated areas. This area of the Snake River flows largely through a wilderness area (Hells Canyon Recreation Area; Wallowa-Whitman National Forest), and is bordered on the east by Idaho, on the northwest by Washington, and on the southwest by Oregon.

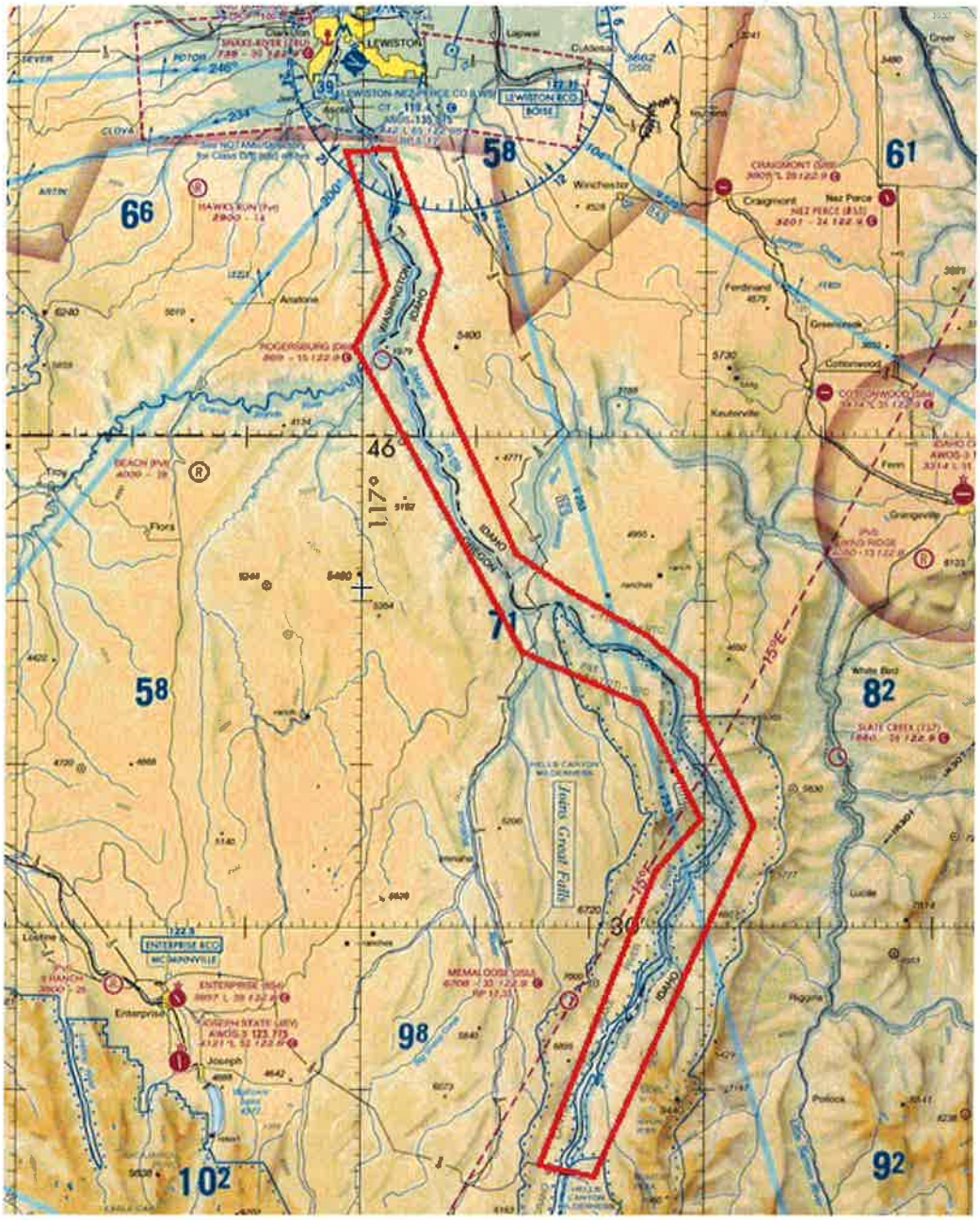

Figure 3. View, facing upstream, of the Bernard Creek to Saddle Creek salmon spawning area on the Snake River (near river mile 236), demonstrates the isolation and ruggedness of the terrain associated with the Hells Canyon Reach of the Snake River.

Figure 4. View, facing downstream, of the Imnaha River to Eureka Bar salmon spawning area on the Snake River (near river mile 191), demonstrates the isolation and ruggedness of the terrain associated with the Hells Canyon Reach of the Snake River.

Figure 5. View, facing downstream, of the Buffalo Island salmon spawning area on the Snake River (near river mile 161), demonstrates the isolation and ruggedness of the terrain associated with the Hells Canyon Reach of the Snake River.

**E. The Reasons Why Granting the Exemptions Would Not Adversely Affect Safety, or How the Exemptions Would Provide a Level of Safety at Least Equal to that Provided by the Existing Rule.**

**1. Part 21, Subpart H: §§ 21.173 and 21.175(a) and (b) – Airworthiness Certificates.**

The sUAS that IPC intends to use cannot carry a pilot, passengers or property for hire, does not carry flammable fuel, and will be flown only under strict operational requirements. Combined with the fact that the sUAS weighs less than five pounds and is constructed from lightweight materials, the sUAS and its operations will be as safe as or safer than a conventionally certificated manned aircraft performing similar missions.

**2. Section 45.23(a) and (b) – Marking Requirements.**

IPC proposes to achieve an equivalent level of safety by including the word "EXPERIMENTAL" on the sUAS propeller booms, where individuals in the vicinity of the

sUAS, while it is preparing for launch, will be able to see the designation. Additionally, the permanent placard discussed for item 13 below will provide sUAS registration information should it be found on the ground, if it were ever lost. Finally, IPC will display at the ground station a high contrast flag or banner that contains the words "Unmanned Aircraft Ground Station" in letters three inches high or greater. Because the sUAS will operate within one-half nautical mile of the ground station, the banner should be visible to anyone who observes the sUAS and chooses to investigate its point of origin.

**3. Section 45.27(a) – Location of Marks.**

As discussed in item 2 above, IPC proposes to achieve an equivalent level of safety by including the word "EXPERIMENTAL" on the sUAS propeller booms, where individuals in the vicinity of the sUAS, while it is preparing for launch, will be able to see the designation. Additionally, the permanent placard discussed for item 13 below will provide sUAS registration information should it be found on the ground, if it were ever lost. Finally, IPC will display at the ground station a high contrast flag or banner that contains the words "Unmanned Aircraft Ground Station" in letters three inches high or greater. Because the sUAS will operate within one-half nautical mile of the ground station, the banner should be visible to anyone who observes the sUAS and chooses to investigate its point of origin.

**4. Section 45.29(a), (b)(3), (c), (d), (e), and (f) – Size of Marks.**

As discussed in items 2 and 3 above, IPC will achieve an equivalent level of safety by including the word "EXPERIMENTAL" on the sUAS propeller booms, where individuals in the vicinity of the sUAS, while it is preparing for launch, will be able to see the designation. Additionally, the permanent placard discussed for item 13 below will provide sUAS registration information should it be found on the ground, if it were ever lost. Finally, IPC will display at the ground station a high contrast flag or banner that contains the words "Unmanned Aircraft

Ground Station" in letters three inches high or greater. Because the sUAS will operate within one-half nautical mile of the ground station, the banner should be visible to anyone who observes the sUAS and chooses to investigate its point of origin.

**5. Section 61.113(a) and (b) – Private Pilot Privileges and Limitations.**

By following certain requirements, an equivalent or higher level of safety can be maintained throughout all sUAS flight operations. Specifically, the sUAS will be operated in the field with both a pilot in command ("PIC") and a ground-based visual observer ("VO") in accordance with FAA Policy N 8900.227 Section 14 "Operational Requirements for UAS," with the following restrictions:

(a) All operations will occur in Class G airspace at no more than 400 feet AGL. This provides safe separation between the sUAS and manned aircraft;

(b) Operations will occur over property owned or controlled by IPC, over private property with the permission of the land owner, or over sparsely populated or unpopulated areas. This provides an order of safety and privacy from unwarranted surveillance of non-participating individuals;

(c) Operations over unpopulated portions of public lands (e.g., public forests, national recreation areas, etc.) will occur with permission of the respective administrative agency (e.g., U.S. Forest Service, Bureau of Land Management, etc.) This provides a level of security to operations;

(d) When necessary, all required permits will be obtained from federal, state, and local government prior to operation. This provides a level of security to operations;

(e) The sUAS will not be operated over urban or populated areas. This provides for safety, security, and privacy of individuals, and separation from manned aircraft;

(f) The sUAS will not be operated at air shows or over an open-air assembly of people. This provides a level of safety, security, and privacy of individuals, and separation from manned aircraft;

(g) The sUAS will not be operated over heavily trafficked roads. This provides a level of safety, security, and privacy for individuals, and separation from manned aircraft;

(h) The sUAS will not be operated within five nautical miles of an airport or heliport with active ATC. This provides a level of security and safety with reference to separation from manned aircraft;

(i) Operations will be limited to daytime, visual meteorological conditions. This provides for overall safe operations and enhances the ability to maintain separation from manned aircraft;

(j) The sUAS will remain within Visual Line of Sight, at no greater than one-half nautical mile of the PIC at all times. This provides for overall safe operations, and enhances the ability to maintain separation from manned aircraft;

(k) While the sUAS is airborne, a VO will be positioned within normal voice distance to the PIC. This provides for overall safe operations, and enhances the ability to maintain separation from manned aircraft;

(l) The PIC will file a notice to airmen ("NOTAM") providing radial/DME, radius, and a date/time group for each operation. This provides for overall safe operations, and enhances the ability to maintain separation with manned aircraft.

In addition, personnel who may act as PIC, operators, or VO will meet the requirements outlined in FAA Policy N 8900.227, Section 16 "Personnel Qualifications." These individuals will be required to successfully complete a FAA-recognized private pilot ground instruction and pass the FAA Private Pilot written examination. Therefore, operators will receive instruction in basic aeronautics, navigation, meteorology, and aviation regulations before conducting sUAS operations. This measure aligns with the rule proposed in Administration's Notice of Proposed Rulemaking,[4] as a minimum requirement for commercial operators of unmanned aircraft that weigh less than 55 pounds.

Personnel who may act as PIC, operators, or VO will be required to complete ten hours of computer-based flight simulation (using the radio transmitter that controls the actual sUAS), and

[4] Operation and Certification of Small Unmanned Aircraft Systems, 80 Fed. Reg. 9544 (Feb. 23, 2015).

ten training flight hours (or 60 flights) on the sUAS intended for use. These training exercises will occur before commencing actual field operations.

In other Section 333 exemptions the FAA has granted recently, the FAA has required a current commercial or private pilot certificate for the express purpose of satisfying security screening of operators. In lieu of obtaining commercial or private pilot certifications, and in order to fulfill Administration recommendations of complying with Department of Homeland Security ("DHS") security screenings, IPC requests that its operators undergo a security screening of equivalent level.

IPC notes that the Administration has found that similar requirements provided an equivalent or better level of safety for operation of sUAS for operations permitted pursuant to public COAs.

Additionally, the sUAS (MikroKopter – hexa) that IPC proposes to use has a high degree of pre-programmed safety control. Three levels of safety are pre-programmed into the sUAS and activated in the event of a loss of control link. First, each sUAS has four active radio receivers. If one fails, resulting in the loss of link to the on-ground radio transmitter, any of the remaining three radio receivers will immediately pick up the control signal. Second, if all four radio receivers fail, and if the sUAS has GPS signal, it will immediately cease movement and hover in place at elevation for a pre-programmed amount of time. If control is not re-established during that time, the sUAS will then automatically return to its point of launch and initiate another pre-set hovering period. If control is not re-established during the home-point hover period, the sUAS will then automatically reduce power and return to the ground. Third, if all radio receivers fail, and if the sUAS does not have GPS signal, upon loss of control, the sUAS will immediately cease movement and initiate a pre-programmed hover period, at elevation. If control has not

been re-established by the end of the pre-set hover period, the sUAS will then reduce power and return to the ground.

**6. Section 61.133(a) – Commercial Pilot Privileges and Limitations.**

As discussed in item 5 above, by following certain requirements, an equivalent or higher level of safety can be maintained throughout all sUAS flight operations. Specifically, the sUAS will be operated in the field with both a PIC and a ground-based VO in accordance with FAA Policy N 8900.227 Section 14 "Operational Requirements for UAS," with the restrictions noted in item 5 above.

Personnel who may act as PIC, operators, or VO will meet the requirements outlined in FAA Policy N 8900.227 Section 16 "Personnel Qualifications." These individuals will be required to successfully complete a FAA-recognized private pilot ground instruction and pass the FAA Private Pilot written examination. Therefore, operators will receive instruction in basic aeronautics, navigation, meteorology, and aviation regulations prior to conducting sUAS operations. Finally, based on the Administration's recent Notice of Proposed Rulemaking on sUAS, it appears to be the aim of the Administration to develop a new classification of airman specifically for the sUAS operations that would require operator training and certification identical to that which IPC proposes.

Personnel who may act as PIC, operators, or VO will be required to complete training as noted in item number 5 above.

In other Section 333 exemptions the FAA has granted recently, the FAA has required a current commercial or private pilot certificate for the express purpose of satisfying security screening of operators. In lieu of obtaining commercial or private pilot certifications, and in order to fulfill FAA recommendations to comply with DHS security screenings, IPC requests that its operators undergo a security screening of equivalent level.

IPC notes that the Administration has found that similar requirements provided an equivalent or better level of safety for operation of sUAS for cases of operations permitted pursuant to public COAs.

**7. Section 91.7(a) – Civil Aircraft Airworthiness.**

An exemption to this section will not affect the level of safety intended by the Administration. An equivalent level of safety will be provided because sUAS operating manuals and pre- and post-flight checklists will be present at the ground station and followed by the operators. This will ensure an airworthy condition.

**8. Section 91.9(a), (b) and (c) – Civil Flight Manual, Markings, and Placard.**

With respect to airworthy condition, see discussion in item 7 above.

With respect to markings and placards, see items 2, 3, and 4 above.

With respect to having flight manuals onboard the aircraft, given the small size and configuration of the sUAS, the lack of a cockpit, and the fact that no persons will be aboard the sUAS, it is unnecessary and not possible to carry the documents required by this section. To obtain an equivalent level of safety and meet the intent of Section 91.9, IPC will make a current, approved sUAS operating manual (*see* Exhibit 1) available to the operator at the ground station anytime the sUAS is being prepared for flight, or is in flight, so that the operator has immediate access to the manual. The Administration has previously issued exemptions to this regulation: *See, e.g.*, Exemption Nos. 8607, 8737, 8738, 9299, 9299A, 9565, 9565B, 10167, 10167A, 10602, 32827, and 10700.

**9. Section 91.109 – Flight Instruction.**

An equivalent level of safety can be assured with instruction provided through a training program. During training flights the instructor and trainee will be situated side by side, and the

control transmitter can be readily passed between the instructor and trainee. In addition, the sUAS will not carry a pilot or passengers. The size and speed of the sUAS, and its safety features limiting the potential for operation outside the operating conditions set forth in this Petition provide an equivalent level of safety. The FAA has approved exemptions for flight training without fully functional dual controls for a number of aircraft and for flight instruction in experimental aircraft. *See* Exemption Nos. 5778K and 9862A.

**10. Section 91.119 – Minimum Safe Altitudes.**

To provide an equivalent level of safety, flights will only occur over sparsely populated or un-populated areas, private property owned by IPC, or with the permission of the private property owners. If flown over private property not owned by IPC, and if bystanders are present, those individuals will be notified about the expected flight route and the associated risks to persons and property on the ground. Because of the small size, light weight, and speed of the sUAS, the risk to people, vessels, vehicles, and structures is substantially lower than that of manned aircraft operating at or below 500 AGL. The sUAS will not be operated over congested areas or over any open air assembly of people. The sUAS does not carry flammable fuel. The sUAS will be operated at an altitude allowing, if a power unit fails, an emergency landing without undue risk to people or property on the ground. The low altitude flight of IPC's sUAS operations will ensure separation between IPC's sUAS operations and the normal operations of conventional manned aircraft, which generally operate above 500 feet AGL.

**11. Section 91.121 – Altimeter Settings.**

An appropriate altimeter measurement presented to the sUAS operator/pilot should be above ground level based on the local barometric pressure at the point of launch. To provide an equivalent level of safety, the sUAS altimeter will be set to zero on the ground prior to each and every flight. Since the sUAS can fly no more than 20 minutes and is intended to remain within

the visual line of sight of the operator(s), even rapid changes in barometric pressure will have limited effect on the safety of the flight.

**12. Section 91.151(b) – Fuel Requirements.**

Since IPC's operations generally require less than ten minutes and the sUAS will not be flown more than one-half nautical mile from the point of launch and intended landing, a full battery charge at launch will ensure that the intent of the reserve energy requirement of this section is met. IPC believes that relief from this section of 14 C.F.R. is safe and within the scope of exemptions to other applicants previously granted.

**13. Section 91.203 – Display of Civil Aircraft Certifications.**

In order to meet or exceed an equivalent level of safety, IPC proposes to affix a placard to the sUAS that provides the following information:

(a) Manufacturer;

(b) Serial Number (or IPC Property Number);

(c) IPC Contact Information.

In addition, registration documents will be kept on the ground at the control point where the operator will have immediate access to them.

**14. Sections 91.405(a), 91.407(a)(1), 91.409(a), and 91.417(a) and (b) inclusive – Required Maintenance.**

IPC plans to have the PIC perform maintenance and inspection of the sUAS and be authorized to approve the sUAS for return to service. As provided in the attached sUAS operating manual (*see* Exhibit 1), the PIC will ensure that the sUAS is in an airworthy condition prior to flight and conduct detailed inspections after every ten hours of operation. Maintenance performed by the PIC will be limited to replacing rotor booms, replacing propellers, motors and wires, repairing and replacing the camera mount/gimbal, repairing and replacing landing struts,

and updating software and firmware. All other maintenance will be performed by the manufacturer. The PIC will document work performed. IPC is confident that, because of the small size, construction, and simplicity of the sUAS, and lack of flammable fuel, the PIC can ensure an equivalent level of safety. In granting exemptions from these sections to other applicants, the Administration has found an equivalent level of safety compared to manned aircraft. *See, e.g.*, Exemption Nos. 11109, 11136, and 11138.

**F. Summary Suitable for Publication in the Federal Register.**

IPC petitions the Federal Aviation Administration for relief from compliance with 14 C.F.R. Part 21 Subpart H;14 C.F.R. Part 27; 14 C.F.R. §§ 45.23(a) and (b); 45.27(a); 45.29(a), (b)(3), (c), (d), (e) and (f); 61.113 (a) and (b); 61.133(a); 91.7(a); 91.9(a), (b) and (c); 91.109(a); 91.119; 91.121; 91.151(b); 91.203; 91.405(a); 91.407(a)(1); 91.409(a); 91.417(a) and (b) for purposes of operating small unmanned aircraft weighing less than five pounds on property that is owned or controlled by IPC, over private property with permission of the landowner, and/or over sparsely populated or unpopulated areas. IPC proposes that its operation be subject to the operating conditions and safety standards set forth in the Petition in lieu of the above-referenced regulations in order to provide a level of safety equivalent to those regulations.

**G. Additional Information.**

In support of its Petition, IPC includes, for the Administration's review and consideration, the operating manual for the sUAS IPC plans to use for its natural resource, research, and monitoring, MikroKopter Pilots Operating Manual, translated from German (attached as Exhibit 1), the Checklist for Use Prior to First Flight, and After Major Maintenance Upgrades (attached as Exhibit 2), and MikroKopter Pre-Flight Checklist and MikroKopter Post-Flight Checklist (attached as Exhibit 3).

## IV. CONCLUSION

For the reasons set forth above, IPC satisfies the relevant criteria for approval under Section 333 of the Reform Act and exemptions from referenced regulations pursuant to 49 U.S.C. § 44701(f). Accordingly, IPC respectfully requests that the Administration grant the relief requested in this Petition to allow IPC to use sUAS for the purposes and under the conditions set forth herein. Granting this Petition will not only further Congress' instruction to expedite the safe integration of UAS into the national airspace system, but will also further the significant public interest in the safe and reliable research and monitoring of natural resources.

March 23, 2015

Respectfully submitted,

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