

MEMO

From: Michael S. Baum <michael@secureav.com>

To: Aeronautical Charting Office

Date: February 27, 2006

**Re: PROPOSAL TO DESIGNATE LOCATIONS OF COLLECTION SITES
FOR CONTAMINATED FUEL, OIL, UNIVERSAL WASTE, AND HAZMAT
ON AIRPORT DIAGRAMS (“PROPOSAL”)**

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1. EXECUTIVE SUMMARY – This is a proposal to obtain approval and implementation for the designation of collection facilities for contaminated fuel, used oil, universal wastes, and hazardous materials (HazMat) at airports on official public-use airport diagrams (collectively “Collection Sites”). Recognizing the significant environmental consequences of improper disposal/handling of HazMat, this proposal seeks to advance environmental quality of airports and adjacent communities, create awareness and heightened visibility of petroleum disposal and recovery, highlight progressive airports’ collection programs and encourage other airports to do better.

2. STATEMENT OF THE PROBLEM – The improper handling/disposal of fuel, oil, and other chemicals used to operate and service aircraft (collectively “chemicals”) can contaminate soil, surface water, and ground water, degrade air quality, and harm wildlife, as well as violate the law, and in the longer run, harm aviation generally. The disposal of chemicals by pilots is hampered by not knowing the location and availability of chemical Collection Sites and ignorance of the dangers of and penalties for improper HazMat disposal. Pilot awareness is further challenged by non-uniform communications from airport and environmental authorities concerning Collection Sites. New focused and responsive initiatives are needed.

Some of these chemicals and their hazards are summarized as follows.

Contaminated Fuel - Studies indicate that 2-3 million gallons of leaded aviation fuel are deliberately poured onto the ground annually during pre-flight fuel sampling.¹ Such dumped fuel results in lead and petroleum hydrocarbons getting into the soil and ground water,² evaporating hydrocarbons into the air, and deteriorating asphalt tarmacs. Petroleum hydrocarbons can be particularly damaging if discharged into rivers, streams, bays and estuaries in ecologically sensitive coastal areas – the locus of an unfortunate number of airports.³ However, handling fuel samples appropriately is a simple action that will mitigate the environmental impact of GA activities significantly. Many GA airports do not offer environmentally safe (if any) fuel collection containers,⁴ and those that do may not necessarily place them in sufficient/convenient locations.⁵

Used Oil - Used oil is the largest source of water pollution.⁶ One improperly disposed gallon of oil can pollute a million gallons of fresh water.⁷ The EPA asserts that 200,000,000 gallons of used oil (from all sources) are improperly disposed of annually from all sources. As a practical matter, many pilots replenish or change engine oil on a “do-it-yourself” basis. Do-it-yourself oil changes are sometimes completed at one’s tie-down location where no formal environmental controls are in place. Consider that 60 percent of “do-it-yourselfers” (from all sources) dispose of oil improperly!⁸ Perhaps aviators do better, but such statistics are not readily available.

Used Oil Filters - Used oil filters are typically required to be drained of free-flowing oil, among other requirements, before disposal.⁹ Some airports co-locate plastic-bag lined canisters (at oil collection locations) for used oil bottles.

Universal Wastes - GA creates considerable “widely generated” wastes which are known as “universal wastes.” These include, but are not limited to, batteries and aerosols. Consider that GA pilots expend a high quantity of batteries for flashlights, timers, backup transceivers, active noise reduction (ANR) headsets, emergency beacons, portable GPS and other navigation devices, flight computers, PDAs, back-up attitude indicators, and a growing number of other self-powered devices. Safe operating practices urge keeping a considerable supply of extra “fresh” batteries on hand. Safe aircraft maintenance practices, particularly for aircraft undertaking single-engine IFR operations, may include recommendations for the biennial replacement of engine lead-acid and other batteries. While universal wastes are generally unregulated for individual household generators,¹⁰ the EPA encourages that these items be taken to Collection Sites for proper recycling or disposal.

Oil Containers - Most piston-powered aircraft engines consume at least one quart of oil for each 8-10 hours of operation,¹¹ and replenishment of this oil is required for safe operation—generating tens of thousands of used oil bottles annually (in addition to the bottles generated from regular, periodic oil changes).¹² Consider, for example, that in California, plastic bottles from over 400 million quarts of oil are disposed of annually. Each “empty” quart container holds approximately one ounce of residual oil and collectively account for 25,000 tons of plastic and over 3 million gallons of oil (from all engine sources). Yet, there is no requirement for recycling these used oil bottles and the oil they

contain.

Notes: (1) The disposal of used oil containers is currently unregulated, and getting people to adhere to the environmentally regulated items (above) is a sufficient challenge. Nonetheless, used oil containers are addressed in this proposal because it is the right thing to do. (2) Improving environmental controls and the environment requires the cooperation of all parties, including but not limited to pilots, airports, communities, manufacturers, and government.

3. AIRPORT DIAGRAMS: AN OPPORTUNITY – Airport diagrams are a logical and readily available place in which to communicate the location of hazmat Collection Sites, including for the following reasons:

- *Required for Safe Flight* - Airport diagrams are part of “all available information” to which pilots must become apprised to satisfy regulatory requirements and to ensure safe flight operations.
- *Ubiquity* - Airport diagrams are included in diverse publications and media, including:
 - The FAA’s Airport/Facilities Directories (A/FD)
 - IFR approach chart packs
 - State aviation authority publications
 - Commercial pilot airport directories
 - The Web at government, association, and diverse aviation sites
- *Positive, Consistent Communication* - Transients and many local-based pilots are often unfamiliar with Collection Sites¹³ – “local” (often *ad hoc*) communications are largely ineffective. Including Collection Sites on airport diagrams will significantly supplement such local communications.
- *Contribution to Training* - CFIs review airport diagrams with their student pilots during primary training. Including Collection Sites on airport diagrams provides a unique opportunity for student pilots to discuss and learn about good environmental practices.
- *Habituation* - Good habits require consistent practices. Increasing a pilot’s exposure (repetitively) to an airport Collection Site contributes to creating and reinforcing good environmental habits. [The opposite of “out of sight, out of mind.”]



4. PROPOSED DESIGNATIONS – It is proposed that:

- (a) Collection Sites be included in the approved list of “Source Data” permissible to be included in airport diagrams, without requiring special or additional approvals;¹⁴ and (optionally),
- (b) One or more unique symbols representing a Collection Site be approved to identify Collection Sites in airport diagrams. The following nonexclusive examples provide possible designs for such symbol(s):

Proposal to Designate Locations of Collection Sites – Aeronautical Charting Forum

1. Simple (baseline)	[CS] Temp: These are placeholders for the actual symbols – consider using standard HazMat symbols.
2. Limited Availability (time or other restrictions)	[CS-⊙]
3: Type of Collection : (O-Oil, F-contaminated fuel, B-Batteries, other-tbd)	[CS-F]

The proposed Collection Site symbol is akin to the current approved source data types: “Tank” symbol (for large tanks -- a circular symbol representing fuel or other tanks), and also appears to satisfy the source type: “other unique structures or features, clearly labeled”¹⁵ and has parallels to the source type: “hot cargo ramps”¹⁶. Note that symbology shall be in accordance with Interagency Air Cartographic Committee specifications or as established by ATA-100.¹⁷

5. SOURCE DATA COLLECTION AND USE – This proposal contemplates that the submission, collection, and use of source data identifying/describing Collection Sites shall:

- Be strictly voluntary.
- Be undertaken exclusively within existing data collection channels – such that no special forms, submissions, or other time-consuming procedures will be required by submitters.¹⁸
- Not necessarily include all available Collection Sites (although their identification/inclusion is encouraged). The scope of submissions is at the exclusive discretion of the submitters.
- Not create potential liability to the submitter – including for unintentional erroneous or inaccurate submissions.

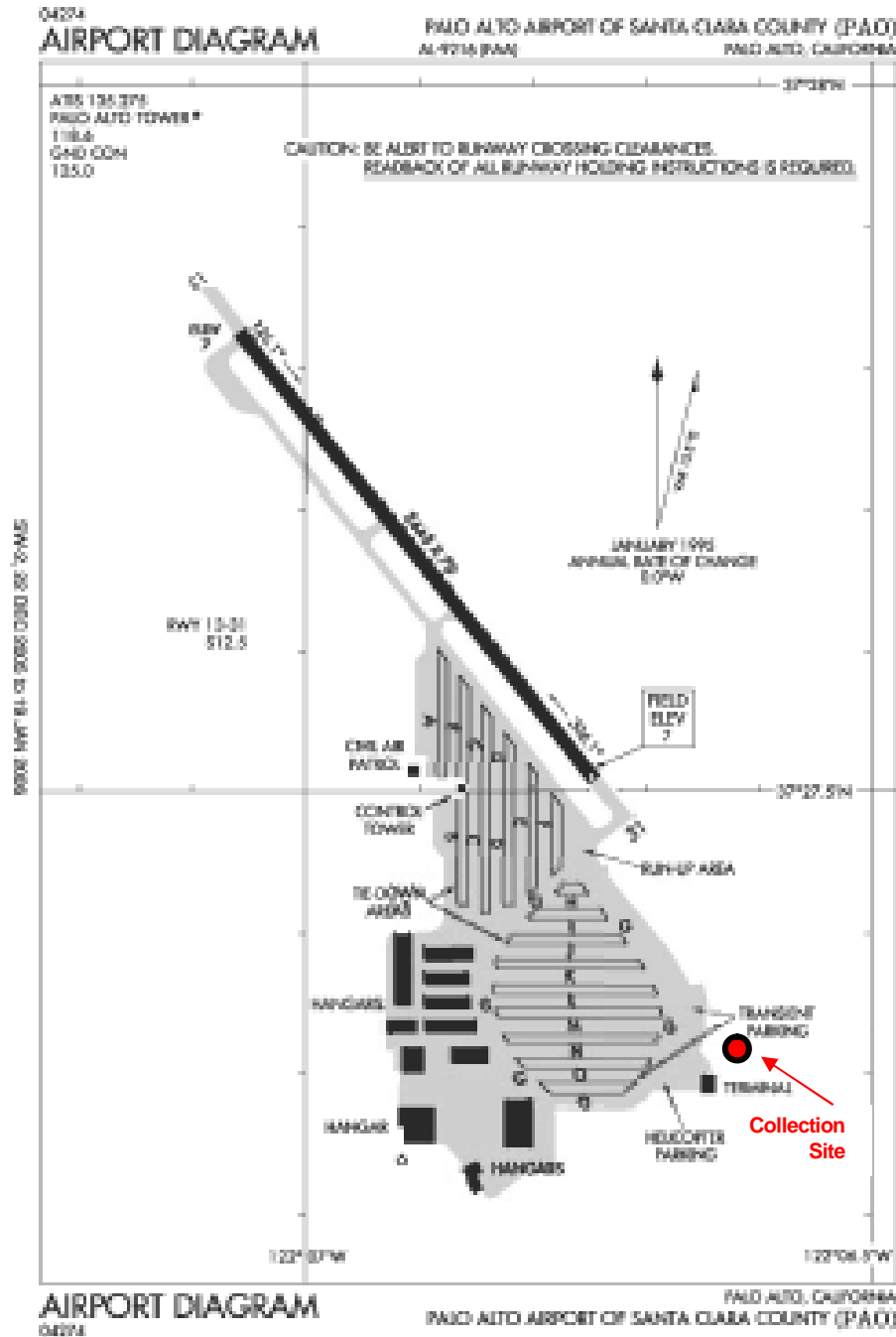
6. PROCEDURES FOR OBTAINING OFFICIAL CONSIDERATION – This proposal shall be submitted to the Aeronautical Chart Forum.¹⁹ The Forum meets semi-annually and serves as the Government-Industry interface to consider and recommend changes to Aeronautical Charts.²⁰

The proposal will first seek input and coordination with diverse interested organizations, and in parallel, from one or more Regional Air Traffic Divisions (which are responsible for proposing airport diagrams and may initiate a request for contract-operated or non-Federal control towers), representative facility air traffic managers (at airports with FAA-operated control towers), and/or with regional airport district office (for non-towered airports).²¹ The requested changes are then submitted to the Cartographic Standards Branch, ATA-130.

7. CONSULTATION – This proposal has been informally vetted with various aviation professionals. Additionally, the Aircraft Owners and Pilots Association,²² the Experimental Aircraft Association,²³ and Jeppesen²⁴ support the addition of collection sites to the charts. The American Association of Airport Executives has floated the proposal to its relevant committees and has received no objection to the proposal.²⁵ And, the Santa Clara County California Airports office has reviewed the proposal without objection.²⁶

8. APPENDICES

a. Sample Airport Diagrams with Proposed Collection Site Designation



APPENDICES, CON'T

b. Aeronautical Charting Forum – Submission

**GOVERNMENT/INDUSTRY AERONAUTICAL
CHARTING FORUM 06-01**

April 19 – 20, 2006

Recommendation Document

Recommendation Document

Subject:

Voluntary designation of collection facilities for contaminated fuel, used oil, universal wastes, and hazardous materials on NACO Airport Diagrams.

Background/Discussion:

The improper handling/disposal of fuel, oil, and other chemicals used to operate and service aircraft (collectively “chemicals”) can contaminate soil, surface water, and ground water, degrade air quality, and harm wildlife, as well as violate the law, and in the longer run, harm aviation generally. The disposal of chemicals by pilots is hampered by not knowing the location and availability of chemical collection sites and ignorance of the impact of improper HazMat disposal. Pilot awareness is further challenged by non-uniform communications from airport and environmental authorities concerning collection sites.

Recognizing the significant environmental consequences of improper disposal/handling of hazmat, this proposal seeks to advance environmental quality of airports and adjacent communities, create awareness and heightened visibility of petroleum disposal and recovery, highlight progressive airports’ collection programs and encourage other airports to do better. A memorandum in support of this Recommendation Document is available at < www.secureav.com/ACF.pdf >.

Consultation: This proposal has been informally vetted with various aviation professionals and organizations, including AOPA, EAA, and Jeppesen which support the proposal; and AAAE and the Santa Clara County California Airports office, which have no objection to the proposal.

Recommendations:

1. Include environmental collection sites in the approved list of “Source Data” permissible to be included in airport diagrams; and (optionally)
2. Approve one or more unique symbols to represent Collection Sites in airport diagrams.

Comments: [TBD]

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APPENDICES, CON'T

c. FAA, Order No. 7910.4C, Airport Diagrams (Jan. 7, 2004)

ORDER	U.S. DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION	7910.4C
		Effective Date: January 7, 2004
SUBJ: AIRPORT DIAGRAM		
<p>1. PURPOSE. This order establishes qualifying criteria and guidelines for the selection, development, construction, and maintenance of airport diagrams for public-use airports.</p> <p>2. DISTRIBUTION. This order is distributed to the branch level and above in the Air Traffic Planning and Procedures Program (ATP-1), and the Office of Airport Safety and Standards in Washington; regional Air Traffic and Airports Divisions; Mike Monroney Aeronautical Center and FAA Technical Center; National Aeronautical Charting Office (AVN-500); airports district offices; airport traffic control towers, and limited military offices.</p> <p>3. CANCELLATION. Order 7910.4B dated May 20, 1991, is cancelled.</p> <p>4. ACTIONS.</p> <p style="padding-left: 40px;">a. Regional Air Traffic Divisions are responsible for reviewing existing and proposed airport diagrams and taking appropriate action to ensure compliance with provisions of this order.</p> <p style="padding-left: 40px;">b. Actions leading to the development of airport diagrams in accordance with paragraph 8, Program, may be initiated by the following:</p> <p style="padding-left: 80px;">(1) At airports with a FAA-operated control tower, the facility air traffic manager may initiate requests for a diagram.</p> <p style="padding-left: 80px;">(2) At airports with a contract-operated or non-Federal control tower, the regional Air Traffic Division may initiate requests for a diagram.</p> <p style="padding-left: 80px;">(3) At non-tower airports, the regional airport district office may initiate requests for a diagram.</p> <p>5. EXPLANATION OF CHANGES. The order has been updated to reflect changes in organizational titles.</p> <p>6. CRITERIA. All towered airports qualify for an airport diagram. Untowered airports must meet the following requirements to qualify for an airport diagram.</p>		
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Distribution: A-WTP/AS1-3; A-X(AT/AS) 5; A-YZ-1; A-FAS; Initiated By: ATA-100 E-LTD; A-EA1-2/8(LTD); MILITARY (LTD); AVN-500 (1 copy)		

¹ FDEP and Embry-Riddle Aeronautical University, *Preflight Fuel Dumping* (brochure on file with author); Myles Accessories, *Detrimental Impact Study Of Aircraft Fuel Sampling and Year 2000 Followup Addendum* (1989, 2000), at < <http://www.mylesaccessories.com/Aviation%20Accessories/folder1/GATS/1989.htm> > (providing multiple derivations to support an average of 2,345,272 Gal. per year); Wesley Stagg, *quoted in*, Dale Smith, *Busted! Pre-Flight Fuel Dumping Under Fire*, AVIATION MAINTENANCE, June 2002, p. 24.

Cf. James B. Burrows, Jr., *Private analysis of the FAA's General Aviation and Taxi Activity Survey CY2000 Embry Riddle's Fuel Dumping Data* (2003) (copy on file with author) (Analysis concluding: “Clearly the 3 million gallons a year number is based on a single analysis of one set of data and three highly suspect assumptions. When you make adjustments to correct for these assumptions you end up with a volume of disposed fuel that is a factor of 3.6 times less and [another data set] 22 times less.) Clearly the true amount of fuel disposed of on the ground from preflight operations is way less than the commonly quoted 3 million gallon number.”).

² The following list of hazardous wastes provides a noninclusive list of aviation-based groundwater-polluting items: used oil, sump fuel or waste fuel, non-empty aerosol cans, stripped paint residue, expired oxygen generators, alodine waste (brushes, wipes, swabs), both water-based and solvent-based parts cleaners, used oil and fuel filters, batteries and battery acid, used shop towels, hydraulic fluid, turbine wash residue, expired chemicals. DOT, Research and Special Programs Administration, Office of Hazardous Materials Safety, *available at* < <http://hazmat.dot.gov/> >. *See* 40 C.F.R. Part 26(D) (providing a comprehensive list of hazardous wastes).

³ Some pilots and others assert that fuel discharges are not a material problem, pointing to a study concerning leaking underground fuel tanks that observes that microorganisms break down harmful chemicals. *See* David W. Rice, et al., *Recommendations To Improve the Cleanup Process for California's Leaking Underground Fuel Tanks* (LUFTs) (UCRL-AR-121762 – report submitted to the Cal. State Water Resources Control Board (SWRCB), Underground Storage Tank (UST) Program) (Oct. 16, 1995), *available at* < <http://www.llnl.gov/environment/erd/rice/121762.pdf> >. Notwithstanding, considerable fuel from the tarmac is carried by sewers and other mechanisms *that do not discharge underground*. And “the very high amount of lead in aviation gasoline easily kills microorganisms so there is no breakdown of harmful chemicals.” Email from Lars Hjelmberg, Exec. Dir., Hjelmco Oil (Apr. 13, 2003).

⁴ Nevertheless, some airport communities have implemented responsive programs. *See, e.g.*, Ventura County Airport, *Used Oil Collection Program*, *available at* < <http://www.ventura.org/airports/usedoil.htm#Overview> >. Some airport associations have taken initiatives to improve the environmental impact of fuel sampling. *See, e.g.*, Palo Alto Airport Ass'n, *GATS Jar Project*, at < <http://www.paloaltoairport.org/gats.htm> >.

⁵ Of course, there are invariably some pilots that will not transport their contaminants any “reasonable” distance. Indeed, resolving sufficient placement of fuel sumps can be a challenge.

⁶ < http://www.dep.state.pa.us/dep/deputate/airwaste/wm/Oil/Documents/Oil_Brochure.htm >.

⁷ *See* Penn. Dept. of Environmental Protection, *Used Oil, Recycled Used Motor Oil - When you do-it-yourself, do it right*, *available at* < http://www.dep.state.pa.us/dep/deputate/airwaste/wm/Oil/Documents/Oil_Brochure.htm >.

⁸ Rufus Browning Rufus, Public Research Institute, *DIYers—Who Are the Best Targets?* (5/4/05), *available at* < <http://www.ciwm.ca.gov/HHW/Events/AnnualConf/2005/April28/Session4/DIYers/DIYTargget.pdf> >. In Pennsylvania, for example, do-it-yourself oil changers dispose of 11 million gallons per year; approximately 14% (1.5 million gallons) of this oil is recycled; and the remaining 9.5 million gallons are improperly dumped. Penn. Dept. of Environmental Protection, *Used Oil, Recycled Used Motor Oil - When you do-it-yourself, do it right*, *available at* < http://www.dep.state.pa.us/dep/deputate/airwaste/wm/Oil/Documents/Oil_Brochure.htm >.

⁹ For example, California requires that “The drained filters must be accumulated, stored, and transferred in a rain-proof container that is capable of containing any oil that may separate from the filters.” CAL. CODE REGS. § 66266.130. *See, e.g.*, Los Angeles County, Certified Unified Program Agency, Health Hazardous Materials Division, Fact Sheet 02-04-HW, *Management of Used Oil Filters* (Oct. 2002), available at < <http://www.lacofd.org/HHMD/FactSheets/UsedOilFilters.pdf> >.

Gasoline fuel filters also require careful disposal. *See, e.g.*, 22 CAL. CODE REGS. § 66266.130(c)(3), and HEALTH & SAFETY CODE § 22250.22(b)(1).

¹⁰ EPA, Universal Waste Rule (Hazardous Waste Management System, Fed. Reg. 25,491 (May 11, 1995), available at < <http://www.epa.gov/docs/fedrgstr/EPA-WASTE/1995/May/Day-11/pr-223.html> > (for example, EPA proposal to maintain the current exemption from hazardous waste regulations for lead-acid batteries under subpart G, part 266). *Cf.* CAL. CODE REGS. Ch. 23 of Div. 4.5, Title 22 C.C.R. or H.S.C. § 25201.16. *See* Cal. Universal Waste Regulations, available at < <http://www.dtsc.ca.gov/LawsRegulationsPolicies/UWR/index.html> >; Mercury-Containing and Rechargeable Battery Management Act, 110 STAT. 1329 (May 13, 1996), available at < <http://www.epa.gov/epaoswer/hazwaste/state/policy/pl104.pdf> >.

¹¹ Oil leaves an engine through evaporation at high temperatures, leaks, and blow-by past the piston rings during operation. Bill Coleman, *The Facts about Engine Oil*, SW AVIATOR ONLINE, available at < <http://www.swaviator.com/html/issueja02/Hangar7802.html> >. “Typical oil consumption for a large turbocharged engine such as the –AE2A may vary between 3-10 hours per quart depending on the time in service.” Textron Lycoming, *Operating Recommendations for TIO-540-AE2A Engine in New Piper Aircraft Malibu Mirage* (2000), available at < <http://www.lycoming.textron.com/support/engineOperationTips/SSP400.pdf> >. Continental cited ¾ qts. consumption per hr./operation for its 550 engines. Telephone Interview with Teledyne-Continental Customer Service Representative (Nov. 28, 2005).

¹² The FAA estimates that GA Piston aircraft flew 20,900,000 hours in 2002. This translates into 2,090,000 quarts of oil for replenishment (at the conservative rate of 1qt. per each 10 hours of operation) – and represents over 2 million quart bottles of waste annually from GA. GAMA, GENERAL AVIATION STATISTICAL DATABOOK 2002, citing FAA, *U.S. Flight Hours by Type and Aircraft*, available at < <http://www.gama.aero/downloads/2004StatisticalDatabook.pdf> >. This may represent over 15, 625 US gal. (representing 1 oz. residual oil in each quart bottle).

¹³ Indeed, the Proposal’s author spent five years flying from his local airport before learning of the existence of a collection site. Anecdotal inquiry suggests that his experience is not uncommon among pilots.

¹⁴ Query, will this require an update to FAA Order 7910.4 to expressly state this?

¹⁵ FAA, Order 7910.4C, Para. 8.a(2)(e) and (k).

¹⁶ *Id.* ¶ 8.a(2)(4)(e).

¹⁷ *Id.* ¶ 8.c.

¹⁸ It is anticipated, for example, that Collection Sites will be submitted using existing annual data updates submitted to the FAA’s Airports Division.

¹⁹ *See* < <http://www.naco.faa.gov/index.asp?xml=naco/acf> >.

²⁰ The Forum next meets on April 18-20, 2006, hosted by the Applied Marine Technology, Inc. (AMTI), at their facility in Arlington, Virginia.

²¹ Because FAA Order 7910.4C authorizes such entities to initiate such requests. Note that symbology shall be in accordance with Interagency Air Cartographic Committee specifications or as established by ATA-100.²¹

²² Email from Ian Twombly, AOPA (Feb. 27, 2006).

²³ Email from Earl Laurence, EAA (Feb. 20, 2006).

²⁴ Email from Doug Higgins, Chart & Display Standards Policy Manager, Jeppesen (Feb. 17, 2006):

I reviewed your proposal this week and must commend you on an excellent paper. Your logic is sound and the research is extremely thorough. Jeppesen would support the inclusion of collection site labels on airport-related services

The charting of these collection sites on airport diagrams would provide the information about their location to IFR pilots that subscribe to NACO or Jeppesen IFR charting services. I suppose local A&Ps and VFR do-it-yourselfers would still have to rely on information issued to FBOs by the airport manager.

The way FAA disseminates and maintains the information once they receive it from the field is obviously critical. If published in the National Flight Data Digest (NFDD) the information would be available to all interested parties, including chart producers such as NACO and Jeppesen. FAA would probably publish this information in the A/FD as well. Anything Jeppesen would publish would be taken from these sources.

Jeppesen also produces a number of airport directories to support both IFR and VFR services. These incorporate airport diagrams as well as textual data, some of which is not found on airport diagrams (very similar to the A/FD). The information could be depicted there as well, especially if it decided to include the table as recommended. This would be a good option for the latter since real estate on the IFR airport diagram tends to be limited.

The symbology of a black dot, akin to the "tank" symbol, along with the label "Collection Site" is logical. The only comment I would make is that there may be a question as to this being a collection site for what. Perhaps the inclusion of the term "Hazmat Mat'I" would provide enough detail. Just a thought.

²⁵ Telephone Discussion with Tyler Setchell, AAAE (Feb. 17, 2006).

²⁶ Telephone Discussion with Ken Betts, Santa Clara County Airports (Feb. 9, 2006).

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