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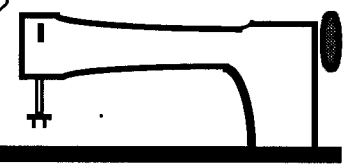
Dedicated to the Sport Balloon Home-Builder



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THE BALLOON BUILDERS' JOURNAL

January-February 1996

In This Issue

A Comment on Content

This issue considers some of the less exciting, but still important aspects of balloon building.

Our first article asks builders to stop and reflect on the safety aspects of amateur balloon projects.

We cannot afford to take our designs for granted. With the growing number of builders and very innovative approaches to lighter than air projects, its important that we remember we are building aircraft. These machines are capable of causing us great harm if they are poorly constructed either because of poor design or poor use of materials.

Our second article begins a process to create a new tool to help builders obtain amateur built airworthiness certificates. Because of the unique rules interpretations found in individual FAA offices, some readers may have to call upon this tool, a checklist, to show compliance with the 'majority portion' requirement of FAR 21.191(g).

Design Considerations for the Amateur Builder

By Bob LeDoux, Editor,

2895 Brandi Lane, Jefferson, OR 97352 CompuServe 73474,76

Introduction

Builders are pushing the limits of traditional balloon design. In particular the growing trend toward lightweight construction and the use of novel materials bring uncertainties about aircraft safety and longevity. As a result, a growing number of balloon builders are becoming 'test pilots' in the real meaning of that term.

I invite your to look at the sidebar on page 3, which lists just a few of the more interesting projects which have been proposed, and in some cases have been built. As you read these ideas consider the following question: "Can we ensure that our building projects produce aircraft which are safe to fly?"

Some may suggest that the FAA and its airworthiness inspection should protect us from unsafe design or construction. The reader who believes this is very mistaken. Look at this quote from the FAA Advisory Circular AC 20-27D "Certification and Operation of Amateur-Built Aircraft":

"5(c). Since 1983, FAA inspections of amateur-built aircraft have been limited to ensuring the use of acceptable workmanship methods, techniques, practices, and issuing operating limitations necessary to protect persons and property not involved in this activity."

> "Can we ensure that our building projects produce aircraft which are safe to fly?"

In other words, the FAA will allow the home builder to put his or her life at **significant** risk so long as innocent bystanders and property are not involved.

Most of us are not 'rocket scientists' much less structural engineers, myself included. Thus the approach we take to promoting safe designs needs to be simple. At the same time we do not want to establish standards which limit the creative efforts of builders. Its all a very narrow fence to walk.

It is my belief that most readers do not need to be concerned about project engineering. This belief results from the nature of most building projects. Take the builder who is constructing a proven design, perhaps a replica of a factory-built envelope with parachute top, using materials similar to those found in the original product. Given reasonable choice of materials and reasonable care in construction, a safe envelope should be the result. But a much different picture develops for the builder contemplating a new basket design, an innovative burner or perhaps a new and yet to be proven deflation system.

Taking a First Step

One possible approach to dealing with aircraft design safety is to look at FAR *Part 31*, the standards by which factory balloons are certified. While these regulations are old they are written in terms that most readers can understand and represent a starting point from which better measures might be developed.

Note, it is not my intent to propose using Part 31 as **the** standard by which we build amateur built balloons. Rather, these regulations should be considered a tool which help builders pursue a safe course. Under the current written FAA interpretation of the 'amateur built' regulations, our balloon projects are not required to meet the design and construction standards of type certified balloons. But we may find it beneficial to reference these standards when planning and executing our projects.

The number of balloon builders is growing, and builders are becoming more sophisticated. As more builders seek information and approvals from their local FAA offices, the limitations of local FAA staff are becoming evident. Few FAA inspectors are trained in lighter-than-air design, construction and maintenance. Thus many FAA inspectors are reluctant to advise the amateur builder on these considerations. Recognizing their own limitations, some of these officials respond, perhaps inadvertently, by placing roadblocks to aircraft certification. The most common roadblock occurs when an FAA official seeks assistance from a higher level of FAA officialdom.

I think the smart builder attempts to keep the decision making at the lowest level of FAA officialdom. Thus a builder who is knowledgeable about and has considered the prescriptions of *Part 31* is in a position to leave a positive impression on the local FAA inspector. That impression may be enough to keep the decision making in the local FAA office.

FAR *Part 31* is titled "Airworthiness Standards: Manned Free Balloons". This is a fairly short set of regulations, just a few pages. Its not the most common set of regulations, so you won't find it in your AIM/FAR manual. But its probably a lot closer than many realize.

You can copy it, along with all the other FAA regulations from "Title 14 of The Code of Federal Regulations (CFR)". This CFR titled 'Aeronautics and Space' is one of a many volume set often found in the reference section of larger libraries. You can also download a copy of these regulations from the CompuServe AVSIG FAA library, and from other "general aviation" computer information bureaus on the Internet.

I like to think of *Part 31* as presenting three different types of information

• Features, equipment and operation limits which are important to safe balloon function. For example FAR 31.57(d) states that a rip cord must be long enough to allow an increase of at least 10 percent in the vertical dimension of the envelope.

• Strength and integrity considerations. FAR 31.46 states that the fuel system should be capable of taking at least twice the maximum anticipated fuel pressure without suffering damage.

• Documentation Requirements. These items are part of the Appendix and specify the repair manual and other documentation requirements for every balloon manufacturer. For the amateur builder these address the development of 'go, no-go' standards as well as inspections after a hard landing.

Relevant Extracts from Part 31

Lets now look at some of the significant *Part 31* excerpts which address "features, equipment, and operations limits" that are worthy of reader consideration. While some of these standards may seen trivial, they are trivial only because the regulations have required them as part of current manufactured balloon technology. For the builder proposing new and innovative projects these standards take on a new relevance.

The True Experimentalist

Here are just a few of the projects proposed or built by readers. Which of these would you be willing to fly without some strength and safety testing?

• A number of builders have constructed low cost envelopes from Tyvek™ house wrap.

• A reader proposed sewing an envelope together with a home serger.

• One builder has constructed a fiberglass basket which collapses like the plastic drinking cup commonly used for back packing. (See *figures 3 and 4*).

• Several pilots have built single place baskets from plastic garbage cans. (See *figure 2*)

• One builder constructed a chair balloon which was actually made from a wooden kitchen chair. A ten gallon tank hangs from each side of the 'basket'. (See *figure 1*).

• We recently reported on a self retrieving balloon, which had as its carriage, a custom built all terrain vehicle. (ATV).

• One resourceful builder is experimenting with a basket constructed of urethane foam panels, with glass fiber reinforced strapping tape or shrink wrapping for additional external support.

• One reader has proposed building a basket from PVC water pipe.

• One reader has experimented with an aluminized Mylar film envelope with seams constructed using fiberglass reinforced strapping tape.

• At least one reader has built a propane tank which disassembles to allow its interior to be used for storage.

FAR Sec. 31.17(a) Performance: Climb. Each balloon must be capable of climbing at least 300 feet in the first minute after takeoff with a steady rate of climb.

Part 31 was originally written in 1965, before the advent of modern burner technology. There were numerous incidents, during those early days, resulting from the lack of burner power; a less common problem today. Excess power is still very important. Sometimes, we as pilots, forget

that the most important contribution of excess burner power is not rapid climb rate, but increased responsiveness on the part of the balloon. Of particular importance is the ability to quickly terminate a descent. Adequate burner power means a mis-judged approach, or a moment of inattention can be corrected without slamming into the ground or into some other more threatening obstacle.

Sec. 31.41 Inspection provisions. There must be a means to allow close examination of each part that requires repeated inspection and adjustment.

This reflects the FAA's long history as airplane inspectors who are keen on looking into little nooks and crannies. Because balloons have very few hidden parts this regulation has less significance, but it is still worth considering.

As a builder contemplates a balloon design its worth looking over the sequence of the structures which transfer loads from the basket bottom to envelope top. Are any of those members hidden? For example, a basket which transfers flight loads by means of cables, may have sharp corners in those cables in the basket floor. As those sharp corners can lead to premature cable damage its important that those cables be 'inspectable'. A review of your own project will allow you to itemize other areas which are critical for regular inspection.

Sec. 31.49 Control systems.

(a) Each control must operate easily, smoothly, and positively enough to allow proper performance of its functions. Controls must be arranged and identified to provide for convenience of operation and to prevent the possibility of confusion and subsequent inadvertent operation.

(b) Each control system and operating device must be designed and installed in a manner that will prevent jamming, chafing, or interference from passengers, cargo, or loose objects. Precaution must be taken to prevent foreign objects from jamming the controls. The elements of the control system must have design features or must be distinctly and permanently marked to minimize the possibility of incorrect assembly that could result in malfunctioning of the control system.

I am impressed with the labels Brian Boland sews on the mouth of his envelopes. Sewn-in panels clearly mark, 'left', 'right', 'top' and 'bottom'. These regulations continue to influence the ergonomic developments found in modern factory balloons.

Sec. 31.49d) Each hot air balloon must have a means to allow the controlled release of hot air during flight.

Sec. 31.55 Deflation means. There must be a means to allow emergency deflation of the envelope so as to allow a safe emergency landing. If a system other than a manual system is used, the reliability of the system used must be substantiated.

Parachute tops have simplified these two requirements by combining a vent and deflation means into a single control. Some builders resort to a 'one shot' deflation system like a 'pop top' or Velcro™ type ripout top. If you don't also incorporate a second vent system in your envelope be prepared to explain to an FAA inspector why you don't think the vent is needed.

(Sec. 31.57 a) If a rip cord is used for emergency deflation, it must be designed and installed to preclude entanglement.

Figure 1: An ultralight chair balloon isn't that uncommon, but a *kitchen chair balloon* is something else. What special structural considerations would you want to give to this system before you are willing to fly it? This photo was taken at the 1994 Experimental Balloon Meet in Vermont.

Many builders utilize a polyester marine grade rope in $^3/_8$ inch or $^1/_2$ inch diameter as a parachute top operating line. This rope is very soft and supple. It will hang up on almost anything like a tank valve, tank strap fitting or instrument pack. (Guess how I know?) A harder or stiffer rope might be a good idea.

Sec. 31.57 (b) The force required to operate the rip cord may not be less than 25, or more than 75, pounds.

I think the upper limit of 75 pounds is too much for persons with limited strength. In particular, builders need to be cautious about making parachute tops of too large a diameter. There are still pilots who like to tell stories about some of the late 1970's balloons with big parachute tops which were impossible to operate. One pilot I know used to put his feet up into the burner assembly and pull the operating line while hanging upside down–the forces were that heavy.

I recently saw an interesting parachute operating line in an *Aerostar* system. The operating line is attached to the top of the basket uprights, runs up to the pulley on the parachute top and back to the basket. The pilot of limited strength can pull the free end, making use of the mechanical advantage of 2:1, thus cutting the parachute operating loads in half. The strong pilot can grab both ends of the rope and pull with a 1:1 mechanical advantage.

(Sec. 31.57 c) The end of the rip cord to be operated by the pilot must be colored red.

The requirement to have the end of the rip out line painted red is unnecessary if the only operating line is to a parachute top. But be prepared to defend this position during your inspection by the FAA.

(Sec. 31.57 d) The rip cord must be long enough to allow an increase of at least 10 percent in the vertical dimension of the envelope.

There are some pilots who prefer to tie off their operating lines with little or no slack which can be downright hazardous. The distance from the envelope crown to the basket increases as air is exhausted from the envelope. A balloon passing through turbulence can become quite elongated as hot air is forced out through the mouth of the envelope. If the operating line is tied off with little slack, this situation can be aggravated when the elongating envelope activates the control line.

Sec. 31.25(c) ..The primary attachments of the envelope to the basket, trapeze, or other means provided for carrying occupants must be designed so that failure is extremely remote or so that any single failure will not jeopardize safety of flight.

Sec. 31.59 (a) The...basket, or other means provided for carrying occupants may not rotate independently of the envelope.

This reflects the FAA's concern that aircraft utilize redundant systems whenever possible. This is to ensure that no single failure in the basket structure results in separation of the basket from the envelope. While this is a sensible goal, proper design can eliminate this possibility. This requirement makes certification of some European single place balloons very difficult in the USA. While a homebuilt balloon will not be held to this standard, be prepared to defend your decision if you employ a single point attachment in your system.

By the way, *Part 31* makes use of two terms which are antiquated: 'Trapeze' refers to a

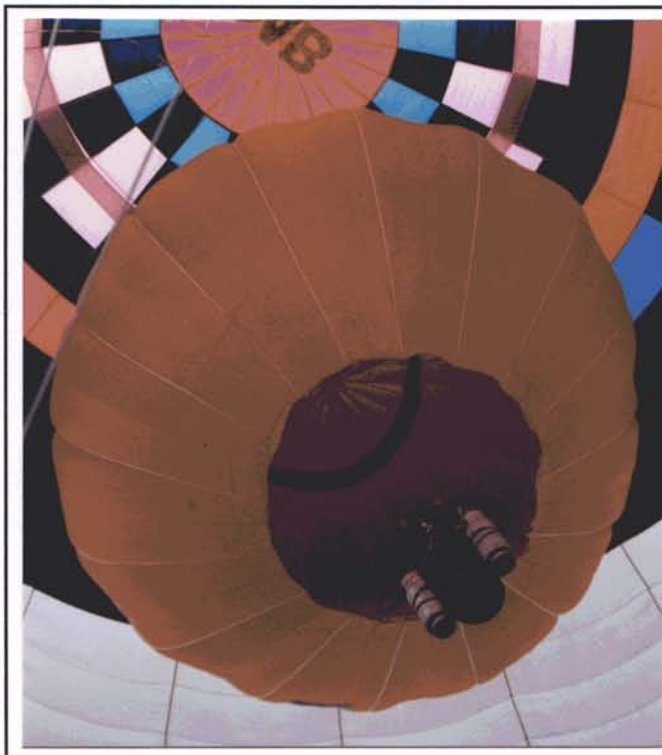

Figure 2: This is a photo of an ultralight balloon flying inside an AX-10 envelope. The small balloon utilizes a basket constructed from a plastic garbage can with a 10 gallon Worthington tank hung from either side.

Figure 3: This basket consists of a series of telescoping fiberglass components, each of which bolts to the next. This assembly is similar to the collapsible drinking cups commonly found in camping gear.

bar from which a pilot hangs, a technique at one time used on smoke balloons. The other term is 'heater' which the regulation uses in place of the common term 'burner'.

Sec. 31.59 (b) Each projecting object on the...basket, or other means provided for carrying occupants, that could cause injury to the occupants, must be padded.

Even factory balloons fall short on this point. We will discuss interior padding in a future article in *BBJ*.

Sec. 31.83 Conspicuity. The exterior surface of the envelope must be of a contrasting color or colors so that it will be conspicuous during operation. However, multicolored banners or streamers are acceptable if it can be shown that they are large enough, and there are enough of them of contrasting color, to make the balloon conspicuous during flight.

This requirement is to ensure that a balloon is clearly visible. Some of our early balloons were of a single color, often white. Aircraft all of one color, even when the color is quite bright, can be lost in the background. Contrast, provided by multiple colors, either in the envelope or through the use of pennants make up for this problem. A builder choosing to build a low cost, single color envelope, can use the pennant concept to meet this requirement at little additional cost. Expect the FAA to require compliance with this provision on a homebuilt balloon as a lack of contrast makes a balloon a hazard to other air traffic.

Sec. 31.85 Required basic equipment.

In addition to any equipment required by this subchapter for a specific kind of operation, the following equipment is required:

(a) For all balloons:

(2) An altimeter.

(3) A rate of climb indicator.

(b) For hot air balloons:

(1) A fuel quantity gauge. If fuel cells are used, means must be incorporated to indicate to the crew the quantity of fuel in each cell during flight. The means must be calibrated in appropriate units or in percent of fuel cell capacity.

2) An envelope temperature indicator.

Sec. 31.49(e) Each hot air balloon must have a means to indicate the maximum envelope skin temperatures occurring during operation. The indicator must be readily visible to the pilot and marked to indicate the limiting safe temperature of the envelope material. If the markings are on the cover glass of the instrument, there must be provisions to maintain the correct alignment of the glass cover with the face of the dial.

These instrumentation requirements are for type certified balloons. If you choose to forego instrumentation, be prepared to explain your reasons for that decision to your FAA inspector.

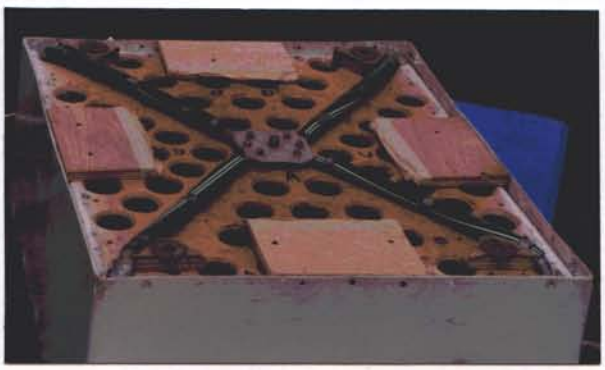

Figure 4: This is a bottom view of the basket seen in *figure 3*. Note the lightening holes in the basket floor.

Working Towards a Balloon Project Checklist

By Bob LeDoux, Editor,

2895 Brandi Lane, Jefferson, OR 97352 CompuServe 73474,76

Reader input is sought on a new tool to help builders obtain their airworthiness certificates

Introduction

According to FAR 21.191(g), a builder must perform "the major portion" of aircraft construction in order to qualify the aircraft for an amateur-built experimental airworthiness certificate. With the growing market in airplane kits, many airplane builders have been paying other persons, commonly called 'hired guns', to construct their kits. The FAA has sought to better define the 'majority portion' as to ensure builders are falling within the regulations.

With this federal 'redefinition' comes the opportunity for balloon builders to create a new tool in our quest for airworthiness certificates.

Introducing: the Checklist

To meet their concerns the FAA is currently drafting an Advisory Circular (AC), known as 20-CAB. This AC is titled, "Commercial Assistance During Construction of Amateur-Built Aircraft". This AC offers one particular process to show compliance with the federal regulation. Compliance can be demonstrated through completion of a checklist, Form 8000-38.

This checklist, currently limited to airplane and rotary wing aircraft, itemizes in great detail, the steps of aircraft construction. The checklist is used in the following manner:

1. From the extensive list of building tasks, all those tasks which must be performed to fully construct a particular aircraft are identified.

2. Each of these tasks is then checked off as to whether the 'amateur builder' performed the task, or it was performed by the kit manufacturer or other party.

3. Once all the tasks have been marked a tally is made.

4 More than 50% of the marked tasks must appear in the 'amateur' column for the aircraft to qualify for the amateur built airworthiness certificate.

While the current checklist was developed to aid airplane and rotary wing kit manufacturers, the Experimental Aircraft Association (EAA) has asked *BBJ* to help develop a similar checklist for use with balloons. A first draft of this checklist is included in this issue. It is the EAA's intention to present a finalized version of this checklist to the FAA as an extension to the current form 8000-38.

The EAA's interest in this matter grows out of the growing number of balloon builders who are seeking their assistance in obtaining airworthiness certificates. Most recent is the case of *BBJ* reader Joe Seawright. Joe built a piano *motif* envelope to fly over a Thunder & Colt basket. (See *BBJ*, Issue 12, May-June 1995, page 9, for a photo of this balloon). His local FAA FSDO did not consider his efforts to represent the 'majority portion' of the balloon. Their interpretation, supported by the Atlanta FAA Regional office, is at odds with many other FAA regional and local offices. Hopefully, the checklist process will help to avoid these problems in the future.

Because the checklist is associated with an Advisory Circular, its use is not mandatory or as stated in AC 20-CAB:

"Like all AC material, this AC is not mandatory and does not constitute a regulation. It is issued for guidance purposes and to outline a method of compliance with the rules. In lieu of following this method without deviation, a person may elect to follow an alternate method, provided the alternate method is also found by the FAA to be an acceptable means of complying with the requirements of the FAR...."

A Checklist for Balloons

Our first effort to create a checklist for balloon projects is printed on pages *9* and *10*.

We are seeking reader input as to the appropriateness, the content and use of this checklist. You may send your comments to *BBJ*. If you wish to discuss this issue directly with the EAA, you can contact Mr. Ben Owen, Director. of Information Services, Experimental Aircraft Association, P.O. Box 3086, Oshkosh, WI 54903-3086.

Gas Balloon pilots: We need your input to modify this checklist to better reflect the unique nature of gas balloon construction.

At this time there is no proposal to include hot air blimps in the checklist. They represent an extremely limited market, and no certification issues have been raised.

Approaching the FAA with your Project

This checklist may be useful, especially to builders who deal with FAA offices that have little balloon certification experience. However, we recommend that you not use this checklist unless it is necessary to do so.

Let's put the checklist in perspective as part of an effort to obtain an airworthiness certificate. Let's assume a builder wishes to construct an envelope, 'from scratch' to fly over a fairly complex (perhaps an almost new double burner system) basket. We would propose the following process.

1. Before beginning the project attempt to locate other balloon builders in your FSDO. Ask these builders probing questions about the attitude of the FAA to balloon projects.

2. Then, approach the local FAA FSDO and discuss the project with a local maintenance inspector. Ask whether that office will consider the envelope as the 'major portion' of the balloon project. In many FSDO's the answer will be a clear 'yes'.

3. If the answer to the pervious question is 'No', or if you have any uncertainty about the willingness of the FAA office to agree to the project definition, its time to pursue other options: One option is to ask FAA officials from other areas to assist. (See Lyle Alexander's letter on page 11.) Another option is to provide a list of other balloon builders who have received an airworthiness certificate for balloons flying a homebuilt envelope over a factory built 'bottom end.' We have a limited list of these builders, at *BBJ*, and will provide the list to readers who need this information. In some cases, this documentation of 'precedent' will be sufficient to garner FAA support.

If the local FAA office expresses continued unwillingness, it may be time to look at other alternatives. One possibility is to employ the checklist included with this article. While the checklist does not, at this time, have official sanction, it is in keeping the intent and purpose of the FAA form 8000-38 used with other types of homebuilt aircraft. As such it may be accepted as "...an alternate method..." as discussed in the AC 20-CAB extract quoted above.

Of course, its important to do your home work before taking this option to the FAA. The wise builder would sit down and actually fill out the checklist, making notes as to why each item should appear under column of work performed by the 'amateur'.

How the builder approaches the FAA can significantly impact the problems to be faced. For example, it might be a mistake to inform local officials that you have a complete basket assembly which "only" has to be cabled up to an envelope.

When dealing with a particularly difficult office it may be wise to begin with a completely stripped basket into which you fabricate, assemble and install the items which create the completed basket assembly. This process can be very effective in moving items into the 'amateur' column of the checklist while at the same time, reducing the count of items on the other side.

Among the tasks you might consider are fabrication, assembly and installation of tank covers, upright covers, tank straps, fuel lines and instrument package. Preparation of the basket may also include removing scuff pads in need of renovation or replacement, disassembling hose assemblies to replace joint tape or compound. If hoses are approaching a life of 10 years, new assemblies might be fabricated.

With some thought, the builder may identify additional tasks, not included in the proposed checklist, which are appropriate to his or her particular project.

Coda: Arguments for Excluding Burners and Tanks from the Checklist

Referring now to Advisory Circular AC 20-27D ("Certification and Operation of Amateur-Built Aircraft"), paragraph 3 of this AC states that "...commercially produced components and parts, normally used in aircraft may be used [in amateur built aircraft]...including...engines...propellers... brake assemblies...."

This concept of aircraft "component" is very important. For example, building an airplane engine could realistically take more effort than building the rest of the aircraft. By allowing the engine, and other parts to be defined as "components", the FAA has allowed the airplane builder to use pre-constructed items and still be eligible for the amateur built certificate.

These same arguments apply to hot air balloon projects. One can argue that burner and tanks are like an airplane engine; components which for safety reasons, are best factory built. Because propane is the fuel used in a hot air balloon system, builders should be discouraged from constructing fuel tanks, (which are pressure vessels). In addition to the safety concerns, once a home built tank is removed from a balloon its legality is questionable under DOT regulations (CFR Chapter 49). Few builders have the skill or facilities to design, construct, test and certify fuel tanks to these federal standards.

The builder can argue that burner construction should be performed by those who have special expertise. A balloon system has *zero* tolerance for any weakness or leakage in the fuel system. Because of these safety considerations, builders should be encouraged to construct burner systems from factory constructed "components" with emphasis on the safe assembly of these proven items.

This view is consistent with other printed FAA amateur built policies. AC 20-27D 13(a) calls for a longer test period when a non-certified engine/propeller combination is used on an airplane. A proven "power plant system" is preferred in airplanes as well as in balloons. The FAA clearly recognizes that the safety of the builder as well as the public is enhanced when certified components are used for a "power plant". It matters little whether that "power" is delivered by an aircraft engine or a hot air balloon burner.

A Construction Checklist for Balloons

	Envelope Construction Details	Work Performed by Amateur	Work Performed by Other Party
A1	Calculate required envelope volume		
A2	Create table of lofted values		
A3	Prepare cutting patterns		
A4	Determine envelope color pattern in compliance with FAR 31.83 (envelope conspicuity)		
A5	Prepare work area and tools		
A6	Fabricate envelope fabric panels		
A7	Assemble panels into gores		
A8	Assemble gores into raw envelope		
A9	Perform close-up of envelope		
A10	Attach vertical load tapes/cords to envelope		
A11	Calculate and lay out deflation/vent port tape		
A12	Install deflation/vent port tape		
A13	Install envelope apex and spider web		
A14	Install other rip stopping tapes		
A15	Install tape at envelope mouth.		
A16	Calculate length of mouth-to-basket cables/cords		
A17	Assemble mouth-to-basket cable/cords		
A18	Install mouth-to-basket cable/cords		
A19	Construct envelope vent panel		
A20	Install vent panel in envelope		
A21	Construct envelope ripout panel		

		Work Performed by Amateur	Work Performed by Other Party
A22	Install envelope ripout panel		
A23	Install ripout and vent control guides		
A24	Install rip and vent control lines		
A25	Fabricate skirt/scoop		
A26	Install skirt/scoop		
A27	Install temperature indicator line or gauge		
A28	Install crown line		
A29	Adjust vent/deflation panel for fit		
A30	Adjust operating lines for length		
A31	Install registration marks		
A32	Install heat proof identification plate		
	Basket Construction Details		
B1	Fabricate basket floor		
B2	Fabricate basket skids or runners		
B3	Install runners/skids on basket floor		
B4	Fabricate vertical load carrying mechanism		
B5	Install vertical load mechanism on basket		
B6	Fabricate basket sides		
B7	Fabricate basket side top surface		
B8	Install basket top surface		
B9	Fabricate burner support mechanism		
B10	Install burner support mechanism.		
B11	Fabricate instrument package		
B12	Install instrument package		
B13	Fabricate individual fuel hoses		
B14	Assemble fuel hose system		
B15	Install fuel hose assembly		
B16	Fabricate tank restraining straps		
B17	Install tank valve "O' rings or new valve bonnets		
B18	Confirm fuel tank compliance with 49 CFR 174 (federally required fuel tank inspection)		
B19	Install fuel tanks with restraining straps		
B20	Install burner		
B21	Fabricate tank and other basket padded covers		
B22	Install tanks and basket padded covers		
B23	Perform fuel system pressure test		
B24	Construct pilot harness		
B25	Assemble envelope to basket		

Letters to the Editor and Other Bits of Information

An FAA Airworthiness Inspector Presents His Position on Airworthiness Certificates.

December 12, 1995

Bob,

I am an FAA Airworthiness Inspector and can assure you that an amateur-built envelope alone is over 51% as required by the rule to qualify for amateur built status. If some FAA bureaucrat is being contrary, have them call me at Scottsdale, AZ, FSDO, 602-640-2230 Ext 263. I have personally certified several amateur-built balloons and all except one used factory baskets, tanks, burners, etc. The FAA's own definition denotes the envelope as *the* aircraft, all else is optional equipment.

Lyle Alexander
1302 E. Utopia Road
Phoenix, AZ 85024

NPRM 95-11 Comment Period Extended

The FAA has extended the comment period on Notice No. 95-11 from December 11, 1995, to February 12, 1996. This action is in response to a request from the Helicopter Association International to allow all affected parties additional time to comment. This information was published in the Federal Register, December 14, 1995, on page 64129.

Airship Supplier

29 Nov 1995

Subject: Worldwide Aeros

Those of you who cruise the World Wide Web might have noticed that Worldwide Aeros, a company based in California, has set up their own web site at http://www.aeros-co.com.

They offer several airship models from the A-20 Ultralight (length: 58.4 ft. ; overall height 25 ft) to the A-50 (length: 77.6 ft, ; overall height: 36.7 ft). I just called them to get that information (1-800 TOAEROS). They say that they offer kits and complete ships. The prices they gave me were a little confusing. Only clear on was approx. 70,000 US$ for the two place A-40 Kit (same dimensions as A-50). They haven't really sold anything yet - at least so it seems.

Roland Escher
rkescher@amhux4.amherst.edu>

Tie-dyed Envelope Project

11/8/95

Dear Bob:

...I'd like to offer to write an article about my first balloon construction project, just completed in September. This was a 49,000 cubic foot, 12 gore, fairly standard Boland design, but $^2/_3$ of the panels are *tie-dyed*. The glory of the creature is how the individual tie-dyes are laid out so as to connect and form a much larger, spiraling structure. This was a fascinating exercise in designing the layout, inventing the methods to dye large-scale nylon, fusing all the pieces into something much larger than the sum of the parts.

If you subscribe to the balloon@lut.ac.uk mailing list, then you've heard all about it; would you be interested in publishing an article about this project?

Color pictures are on the Web at http://vision3.med.upenn.edu/jnw/jnw.html

Jonathan Wolfe
jnw@vision3.med.upenn.edu

Editor's comment: This sounds like a fascinating story. The photo displayed on Internet shows this envelope to be unique in many ways. We hope Jonathan will write an article for us.

Solo Builder in St. Cloud, MN

Hi Bob,

...I am a private pilot who would like to have a single passenger balloon capable of being launched by myself and recovered by myself since I don't have many crew persons available during the best flying conditions here in St. Cloud. I have my own launch field where I can easily inflate and leave the fan for later pickup. So I've been looking into building my own AX-4, or so, with at least a 16' throat and possibly a scoop to ease solo inflations. I do not have access to a suitable sewing machine which poses the biggest problem. I've got all of Brian Boland's info and think the best possibility might be one of his ultralights already built...

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Addendum: The following material was not part of the original publication.

This is a view of Ron Parigoris' *Screwball* "basket." The frame is built using an all-terrain drive system capable of achieving 50 mph on the ground. The machine is not licensed for road use, which makes retrieves interesting. See another photo below.

While *Screwball* has “seating” for four persons, flying fully loaded provides little space for the envelope. The envelope has turning vents and employs a boson’s chair for additional seating. Ron would tie a smoke flare to the end of the crown line and spiral up in a climb, to create a spiral smoke trail.