

Oklahoma Center for the Advancement of Science and Technology

OCAST

Oklahoma Applied Research Support (OARS) Program

**Examples of OARS Reviewer Comments
from Recent Reviews**

OARS Proposal Reviewer Evaluation Comments

- I. Introduction
- II. The Review Process
- III. Chart summary of Focus Item Responses
- IV. Research Plan Focus Statements
- V. Economic Plan Focus Statements
- VI. Reviewer Suggestions

I. INTRODUCTION

Proposal reviewers are asked to evaluate the technical merit of the research and the ability of the team to perform the research as well as the potential for a positive economic impact for Oklahoma for the sales and manufacturing of a product, process or service developed from the research. The previous competition reviewer checklist, for some years, has been distributed at the proposal preparation workshops; however, requests have been received for sample representative reviewer comments in the language of the reviewers. The OCAST R&D staff has assembled comments taken from several proposals from recent competitions. The comments have been modified to remove the identity of the proposal from which they came. Applicants appreciate the OARS review program:

- OARS program reviewer comments are written to assist the research team.
- Reviewer comments are sent to each applicant after the review process is complete.
- Funded and unfunded proposal writing teams receive the benefit of comments from reviewers of nationally recognized stature to assist the project.
- Reviewers often include proposal-writing suggestions for the PI since resubmissions are encouraged in the OARS program.

For any funding agency it is mandatory to follow the instructions in the solicitation or request for proposals. The reviewers are looking for specific information in a given location and in a specific order within the proposal. Proposals are initially read to give the reviewer an overview:

- Often reviewers read the abstract first to obtain an overview of the project, and then they often look at the budget and the budget justification to determine if the costs of the project are reasonable as they relate to the technical portions of the proposal.
- Team biographies are often read next followed by the research plan.
- The economics section is often read after the research plan since if the research plan is poor then the economic benefit to the state is unlikely to be forthcoming.

After the overview reading the proposal is read carefully and thoroughly. Proposal reviewers often formulate questions related to the proposal and then they seek the answers from the proposal.

II. The Review Process

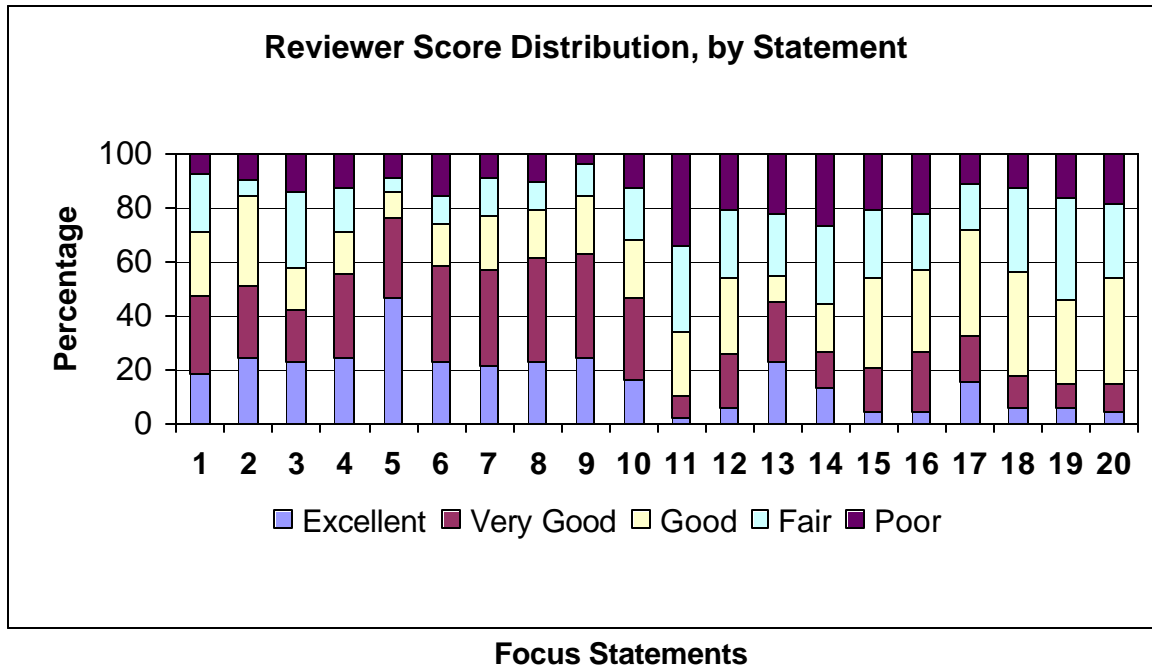
The OARS Committee assigns each proposal to two primary reviewers and then proposals are assigned to a panel for proposal decision at the review session. The primary reviewers are sent a list of focus statements that provide a uniform set of reviewer responses that reviewers modify with comments where additional information may be helpful. The panel members rank and recommend proposals for funding. The recommendations from each panel are assembled at a final meeting of all panel members into an overall ranked list for presentation to the OCAST Board.

OARS Committee members supervise the review and examine all reviewer comments prior to the final meeting of the panel members. The set of focus statements is modified based upon reviewer suggestions to the OARS Committee and it may be changed for any review.

The OARS Committee prior to each review examines the set of reviewer focus statements. The items in this document, therefore, are representative of reviews through FY02.2 and may not be the actual items used in FY03 forward. However, the tone and style of the comments represent well reviewer comments in this program as well as in other agencies research funding competitions.

III. Summary of Reviewer Evaluations

The chart summarizes the reviewer responses to the twenty focus statements that are listed below. Only about 25% of the proposals are funded at a typical review. The chart demonstrates statements related to the research plan (Statements 1-10) must be scored as Excellent for a winning proposal. Especially note Statement 5 that relates to the reviewers evaluation of the principal investigator's ability. Statements 11-20 relate to the anticipated economic benefits to Oklahoma of the project.



1. Creativity and inventiveness of the proposed research.
2. Degree to which state-of-the-art techniques and processes are to be used.
3. Quality of the research plan.
4. Probability of success of the research plan design.
5. Competence of Investigator(s) as measured by training and research experience.
6. Competence of support personnel as measured by training and research experience.
7. Adequacy of facilities.
8. Adequacy of equipment.
9. Commitment of the applicant organization(s) as evidenced by resources dedicated to the project.
10. Appropriateness of budget.
11. Potential for leading to a commercially successful product, process or service within 2 years of project completion.
12. Potential for leading to a commercially successful product, process or service within 5 years of project completion.
13. Potential for leading to a commercially successful product, process or service within 10 years of project completion.
14. Status of Intellectual Properties Agreement.
15. Commitment of financial resources to successfully bring product to market.
16. Availability of marketing capability to successfully bring product to market.
17. National/international market growth potential.
18. Potential for creating jobs in Oklahoma, considering both the probability and number.
19. Potential of short-term impact (within 5 years of project completion) on the Oklahoma economy.
20. Potential for creating jobs that will enhance the technology base in Oklahoma.

The remainder of this document presents reviewer comments. Section **IV. Research Plan Focus Statements** and section **V. Economic Plan Focus Statements** present the review focus statements in the order they are presented to the reviewers. The number to the right of each checklist statement is the percentage of the number of times that comment was marked for a recent competition. At times the same “comment” appeared for several of the items, e.g., “incomplete research plan”; however, in this summary, repeated comments are not replicated.

Section **VI. Overall Reviewer Comments** contains statements from reviewers in which they are conveying to the applicants proposal writing suggestions.

IV. Research Plan Focus Statements

The percentage numbers correspond to the distribution of responses from a recent competition.

1.	Creativity and inventiveness of the proposed research	Percent
	Excellent. A truly original idea that appears to be feasible	18.2
	Very Good.	29.1
	Good. An established technique applied in a new area.	23.1
	Fair.	21.8
	Poor. A proposed repeat; research and application have been done in the past.	7.8

Samples of Reviewer Comments

From Competitive Proposals –

Combining the two concepts leads to an important idea.

This proposal is based on a previous OARS proof-of-concept grant that was recently concluded successfully.

From Non-competitive proposals –

A similar device to that proposed in this project has already been developed and tested. It is not apparent from the proposal what new features will be added.

Similar products should be addressed in Item 24 Commercialization Development Strategy and similarities in research strategies in Item 28 Research Plan. When your product is similar to another product, clearly show why your efforts will result in a superior product.

One of the goals is to perform a literature search during the project. In technical work this done before the proposal is written. I have included references that I found that show this work has already been done.

Given the current public focus on this area and the significant amount of public funding flowing into research and development in this area, the basic idea for this proposal is not particularly novel.

The technique is established and reasonably mature already. It has some sophisticated applications in the business world, but that does not appear to be the application here. It appears that this is simply a widely implemented capability for trade shows and conferences.

The project duplicates known work. It is very important to double-check the literature to determine if the work of others duplicates your efforts. Include sales literature as well as engineering/scientific literature.

2.	Degree to which state-of-the-art techniques and processes are to be used.	Percent
	Excellent. State-of-the-art techniques and processes described.	24.6
	Very Good.	26.2
	Good. Techniques and processes somewhat dated but adequate.	33.8
	Fair.	6.2
	Poor. Techniques and processes out-of-date/inadequate.	9.2

Samples of Reviewer Comments

From Competitive Proposals –

The PI is clearly an expert on this disease. He developed a reasonable theory that deepens the understanding of the multiple causes of this medical problem.

The research and experimental methods are well established.

The techniques proposed are current, but not groundbreaking; however, they are exactly what is needed to solve this problem.

From Non-competitive proposals –

There is insufficient discussion of the tools and techniques to make a judgment.

Techniques and process are not described in the proposal.

It is not clear from the proposal what the current state of the art is in this area so it is hard to judge how creative the approach is.

The main weakness of the proposal is that these experiments are very traditional and will not uncover the reaction mechanisms. It is unfortunate the principal investigator is not proposing to use more modern methods for this study.

State of the art techniques will be used, but the research plan does not show the researchers understand how to apply the techniques to this problem.

3.	Quality of the research plan.	Percent
	Excellent. Based on a body of quality scientific/engineering work that is well referenced.	22.8
	Very Good.	19.3
	Good. Based on somewhat speculative research; adequately referenced	15.8
	Fair.	28.1
	Poor. Does not qualify as research.	14.0

Samples of Reviewer Comments

From Competitive Proposals –

The PI is an expert in this field. He knows the field and is very familiar with its literature. The research plan is built on this expertise.

The goal of applied research project is to develop and test a new device. This system has recently received FDA approval. The current proposal is based on a feasibility study funded by a previous OCAST one-year grant. The research plan consists of five specific objectives. The successful completion of these objectives will lead to a prototype of device, the refinement of surgical techniques to use the device, and a finite element model for predicting the performance of the device. This prototype system will then be developed into a commercial product.

This is a sound and well-written proposal in the same vein as those preceding it. The experimental protocols and oversight are well described and will facilitate success of the project. The compounds to be tested are logically chosen.

From Non-competitive proposals –

This proposal seems premature. Without some preliminary data it is not at all clear that the goals of this proposal can be achieved. It is not obvious from the proposal that the project if it succeeds will result in a viable product.

Lacks sufficient detail to determine if this is research.

The research plan does not give an adequate description of the need for the research, proposed modifications to the methods and the theory as to why these would be better, and a description of criteria for success of the work.

The research plan is not presented in enough detail to allow an accurate evaluation of the technical merit; There is no discernable research plan.

On page 51, Figure 7.2 is missing. It would have been helpful to have that figure.

Proof reading and eliminating grammatical and typographical errors would have helped the proposal.

The first part of the project is clearly defined, but the rest of the work is very general and there is no way to evaluate the inventiveness of the research. They may be inventing new chemicals or a new use of available chemicals. There is no discussion of the need to register new compounds prior to selling.

The proposal lacks detail in important areas. For instance, the PI does not describe in detail which detection and quantification methods he proposes to for identifying agents. The research plan on pages 44 through 51 is kept very general. No details are provided. Therefore, it is impossible to assess the merit of this work.

Samples of Reviewer Comments (continued)

From Non-competitive proposals – (continued)

The length of the project is unclear. According to the cover page it's one year, on page 33 it's 16 months, and on page 34 the duration of the project is 24 months.

The goal of this project has considerable merit. However, the experiments are not well described nor designed. The PI and Co-PI do not appear to have significant experience in this complex assay which may explain why the experiments were not delineated in a meaningful way.

Nicely written proposal, but the writers consider so many items to be trade secrets there are few details in the proposal. It is impossible to properly review such a proposal.

Although the basic idea of the proposal is not bad, there is absolutely no research plan beyond what is provided in the abstract. The proposal does not give a clue as how the system will be developed.

The proposal does not provide any previous work that the plan is based on. The military has invested significant time and money in related projects; it would be very helpful if this work was reviewed and (hopefully with the cooperation of military personnel) the important findings were incorporated into the research plan.

It is not clear from the proposal what research is being proposed. The proposal budget includes contractual services for data analysis, but the proposed research plan does not describe in any detail what work will be done or how this work will be evaluated.

No preliminary data or prior experience exists for key elements of the research plan. In particular, this group has not successfully tried the extraction of the key reagent, and it is not clear that the proposed apparatus is sufficient.

The quality of the research plan is sufficient, but the security aspects have been ignored which will present problems in the commercialization of any content delivered through the resulting product.

Only criteria used to select patients are described, not how biopsied material will be used. Detailed experimental description lacking, patient database not available, number of patients and samples per patient not clarified.

The PI's present no evidence they have more than a superficial knowledge in this area of research. The lack of literature citations show no effort has been given to becoming proficient in this area.

4.	Probability of success of the research plan design.	Percent
	Excellent. Research plan well designed and documented; feasible schedule.	24.6
	Very Good.	30.8
	Good. Adequately designed and documented plan; schedule appears not feasible or schedule appears feasible but plan needs greater definition.	15.4
	Fair.	16.9
	Poor. An inadequate or unfeasible research plan.	12.3

Samples of Reviewer Comments

From Competitive Proposals –

The research plan is well laid out to accomplish the overall objectives of the project.

The goal of this project is to collect more data on how this device helps patients. Based on this information, the device will be improved and refined.

This proposal has several strengths. The research team has a good track record of working together and getting things done.

This is an excellent proposal; however, there is one weakness: the team does not seem to include a collaborator who is an expert in computers. A proposed team member seems to fill this role, but a letter from him or a particular role outlined for him in the proposal would have been helpful.

The strength of the proposal is the superb track record of the principal investigator. The research plan is well laid out to investigate the effect. Furthermore, experiments are proposed to study the mechanisms of the process. All these experiments are well described and motivated and will produce useful scientific knowledge and insight.

The statistical methods are sound, and the external collaborators are all highly respected in their fields and they bring important advice and expertise to the problems at hand.

From Non-competitive proposals –

No new ideas are put forward in this proposal. Therefore, this research plan will not lead to new insights or to a new product or device.

The team of investigators seems competent to carry out the project. It is not obvious, though, that this group has ever worked together as a team.

There is no evidence the PI has ever had success at performing research; It is very important to show successes from previous work.

The research plan can be completed as proposed. However, it is not clear a usable device will result from this study.

The plan needs much greater definition, including tasks to be accomplished and a schedule for these tasks.

5. Competence of Investigator(s) as measured by training and research experience.	Percent
Excellent. Proven researcher(s), with experience in area of research proposal or new investigator(s) with outstanding training, in area of research proposal.	46.6
Very Good.	29.3
Good. Competent researcher(s) with limited experience in area.	10.3
Fair.	5.2
Poor. Researcher(s) background and experience are inadequate.	8.6

Samples of Reviewer Comments

From Competitive Proposals –

The principal investigator and the co-principal investigator have a lot of experience in developing these devices. This collaborative has worked together in the past and seems to get projects done.

The PI is very competent and experienced in this field.

The PI and his co-investigator are senior accomplished researchers.

The proposed support personnel appear to be very well qualified and should contribute substantially.

CVs appear to be solid although no documented expertise in the research area by the PI or Co-PI and other collaborators. They are, however, very knowledgeable and expert in their knowledge areas.

From Non-competitive proposals –

The PI seems competent in this field, although he does not seem to have any training or experience in proposing or carrying out research.

The PI has neither the experience nor the education to suggest any expertise in this project. Work experiences have identified the shortcoming of the current techniques but it is unclear if these experiences would aid in identifying better methods. A collaborator with the necessary background is needed.

The vitas of the investigators are too sketchy to determine if they are qualified investigators.

6	Competence of support personnel as measured by training and research experience.	Percent
	Excellent. Well-qualified support personnel described in proposal.	22.4
	Very Good.	36.2
	Good. Adequate support personnel appear to be available.	15.5
	Fair.	10.3
	Poor. Adequate support personnel not available and/or not adequately described.	15.6

Samples of Reviewer Comments

From Competitive Proposals –

The proposal contains an excellent description of the post-doc to be hired.

From Non-competitive proposals –

The training and experience of the support personnel seems adequate, but the number of requested support personnel seems high.

Not much information is provided on the available support personnel.

The qualifications of the support people are not described in the proposal. It would be very helpful in the evaluation of the proposal to know who has expertise in the proposed research area.

Not much information is provided on available support personnel.

7.	Adequacy of facilities.	Percent
	Excellent. Excellent facilities available for proposed project.	21.4
	Very Good.	35.7
	Good. Adequate facilities available for proposed project.	19.6
	Fair.	14.3
	Poor. Inadequate facilities available for proposed project or not adequately described.	9.0

Samples of Reviewer Comments

From Competitive Proposals –

Facilities will be upgraded to support the proposed project.

From Non-competitive proposals –

Due to the lack of a clear research plan it is hard to discern if the available facilities are adequate.

Only 900 sf of space available for the project, that seems a bit small given sample storage and data analysis needs going forward.

8	Adequacy of equipment.	Percent
	Excellent. Optimum equipment to conduct research in place and/or requested in proposal.	22.6
	Very Good.	38.6
	Good. Adequate equipment to conduct research in place and/or requested.	17.5
	Fair.	10.5
	Poor. Existing and/or proposed equipment inadequate to conduct research or not adequately described.	10.8

Samples of Reviewer Comments

From Competitive Proposals –

The purchase of an additional spectrometer is well justified in the proposal and we recommend funding the purchase.

From Non-competitive proposals –

It is not clear from the proposal that the required equipment needed for the project is available.

A critical piece of equipment is not yet available.

9	Commitment of the applicant organization(s) as evidenced by resources dedicated to the project.	Percent
	Excellent. Organization is making a major commitment of time and financial support.	24.6
	Very Good.	38.6
	Good. An organizational priority with modest support.	21.1
	Fair.	12.3
	Poor. No indicated organizational support for project.	3.4

Samples of Reviewer Comments

From Competitive Proposals –

The PI and his company are committed to this project.

From Non-competitive proposals –

Even though the P claims the company is going to commit \$300,000 to this project, it is not clear how firm this commitment is since the application does not contain a letter of support from the company.

It is not clear that the company has any employees other than the principal investigator. The commitment of the company to the project is based on other factors falling into place (like NIH funding). The commitment of the university labs seems fine.

Current support is largely from external funding but it is the company is hoping an investor comes on this summer.

The proposal indicates [a named company] will be providing financial support for the project. There is no letter of support from [this company] nor are they included in the match forms.

10. Appropriateness of budget.	Percent
Excellent. Well designed to conduct proposed research.	16.1
Very Good.	30.4
Good. Needs modification for proposed research; 25% over or under amount required, or distribution could be improved.	21.4
Fair.	19.6
Poor. Poorly designed budget; 50% over or under amount required.	12.5

Samples of Reviewer Comments

From Competitive Proposals –

The proposed budget appears aggressive, but sufficient.

From Non-competitive proposals –

The Budget and the Budget Justification do not show me you understand the costs associated with your project. Remember, the match is 50% of your project expenses. Often, a critical team member will work for no pay to provide expert advice. Include this person on the Budget at zero pay and include their biography. Section 29 Collaborative Relations as also very important to show the research tem interactions.

The budget requests support for many people, are they all needed to accomplish the goals of the project? The budget description nor the research plan provide sufficient information.

The budget is too top-heavy (too many people). Also, no details are provided on the \$45,000 contractual services.

The PI plans to spend 4 hours per week per year and requests \$32,500. This seems inappropriate. Few researchers are paid \$325,000 annually including fringe benefits for full time work.

The budget justification would need to be much more detailed as to the need of facilities charges. It is not made clear why the monies are needed to support the research.

A significant portion of the budget is the operational costs for the business (insurance, fuel, parts, utilities, etc.). I do not feel that it is appropriate to include these expenses when they are not directly related to the research to be done.

The subcontract seems inflated; the budget justification did not have sufficient detail.

The budget does not reflect the personnel described in the research plan. The \$100,000 subcontract is not fully described and it is unclear why this organization is not a co-applicant.

All funds will be spent outside of Oklahoma.

The budget is very top-heavy with non-researchers.

Based on what was provided in the application, it was very difficult to figure out what the costs were projected to be versus the amount of cash on hand. The project is apparently already being funded since August 2001 from the listed matching accounts according to the "Application for Protocol Approval (for human subject approval)" in the Appendix.

V. POTENTIAL FOR ECONOMIC IMPACT

Economic plan focus statement comments. The percentage numbers correspond to the distribution of responses from a recent competition.

11.	Potential for leading to a commercially successful product, process or service within 2 years of project completion.	Percent
	Excellent. High potential for commercialization within two years of project completion.	2.0
	Very Good.	8.0
	Good. Moderate potential for commercialization within two years of project completion.	24.0
	Fair.	32.0
	Poor. No apparent potential for commercialization within two years of project completion.	34.0

Reviewer Comments – See item 13.

12.	Potential for leading to a commercially successful product, process or service within five (5) years of project completion.	Percent
	Excellent. High potential for commercialization within five years of project completion.	5.6
	Very Good.	20.4
	Good. Moderate potential for commercialization within five years of project completion.	27.8
	Fair.	25.9
	Poor. No apparent potential for commercialization within five years of project completion.	20.3

Reviewer Comments – See item 13.

13.	Potential for leading to a commercially successful product, process or service within 10 years of project completion.	Percent
	Excellent. High potential for commercialization within ten years of project completion.	22.4
	Very Good.	22.4
	Good. Moderate potential for commercialization within ten years of project completion.	10.2
	Fair.	22.4
	Poor. No apparent potential for commercialization within ten years of project completion.	22.6

Samples of Reviewer Comments

From Competitive Proposals –

The commercialization plan is thorough and reasonable.

The proposal states well that version 1 will have a 2-year sales life and version 2 will need to be developed. The stated economics for version 1 are sufficient to justify this project. A well-written commercialization plan is presented.

The market numbers are reasonable and conservative. This reviewer suspects at least twice the proposed sales.

The PI has explained well the regulatory steps needed prior to selling the first unit.

The proposal clearly states the clinical/ medical market niche that will be filled.

The clear analysis of the current competitors convinces this reviewer this project will lead to a better product with great commercialization potential.

The investigators have fully described their manufacturing and distribution partner. The supporting letters show the relationship is well established.

From Non-competitive proposals –

Since the goal of this project is not clearly defined, it is impossible to judge whether or not a product, process or service might be developed.

It is unlikely that this research project will lead to a clinical device acceptable to patients. Even if some device will be developed based on this research, it won't be manufactured in Oklahoma.

Many other companies are developing these kinds of instruments. The proposal does not provide sufficient information to see why and how this project can succeed against this competition. The potential for economic impact will be directly related to the competitiveness of the resulting product.

The proposal does not give enough information for me to make any assessment of the potential for commercialization. There may be a need for the product, but the proposal does not give enough information for me to determine if the proposed product will have a chance of success in this market.

The proposal lacks sufficient focus to identify a market.

There appears to be little commercial need for this product and the proposal is insufficient to justify the project.

It is unclear what the service or product would be from this project. The improved training is supposed to be a benefit to the DOD but how will this company benefit from developing this training. What will be sold or licensed to make money is not apparent from the proposal.

I think the PI has a potentially successful idea, but the proposal does not leave me with confidence that the idea will be successfully executed.

The potential for economic impact will be directly related to the competitiveness of the resulting product.

This reviewer has been hearing these promises of expansion and large contracts for several years now yet the company seems to be growing slowly and methodically. There is some concern over the apparent absence of large contract partners at this point.

The market numbers are not justified in the proposal and they appear to be greatly overstated.

Other products already exist today that provide a lower scale level of interaction and interoperability, but are distributed for free: the monopoly power of the market leader coupled with their existing product's capability poses a dangerous threat to any advancement in new technology in this area, and this threat is not addressed.

It is unclear to this reviewer how the proposed product would even equal the capabilities that already exist, and are firmly entrenched in the commercial sector.

14.	Status of Intellectual Properties Agreement.	Percent
	Excellent. Intellectual Properties Agreement in place or Intellectual Properties Agreement not needed for this project (e.g., one entity project).	13.3
	Very Good.	13.3
	Good. Adequate description of how the patenting and licensing agreement will be effectuated is provided in application.	17.8
	Fair.	28.9
	Poor. Disposition of intellectual property rights not adequately addressed in application.	26.7

Samples of Reviewer Comments

From Competitive proposals -

The intellectual property agreement between the college and the company is in place.

The patent position of the company offers great potential for success.

From Non-competitive proposals –

Intellectual property is not addressed in the proposal.

IP will probably stay outside of Oklahoma.

The economic impact of this proposed product will largely depend on the products ability to protect the copyrights of content providers material, and the ability for this product to compete with similar products that already have an established user base of over 250M users worldwide.

A major aspect that is not addressed in the proposal is for "Content Protection" for copyrighted materials. This is a major issue facing industry today that has not been fully solved by the Digital Rights Management (DRM) solutions in the commercial market currently.

15.	Commitment of financial resources to successfully bring product to market.	Percent
	Excellent. Available financial resources to successfully bring product to market.	3.7
	Very Good.	16.7
	Good. Evidence of ability to summon resources to successfully bring product to market.	33.3
	Fair.	25.9
	Poor. No evidence of financial resources to successfully bring product to market.	20.4

Samples of Reviewer Comments

From Competitive proposals –

While this is a “professor start up” company the marketing plan is well thought out and appears reasonable.

The letter from a potential major customer covers well the initial marketing plan.

From Non-competitive proposals –

No thought has been given as to future costs for bringing the product to market.

It is not clear what the product or service is that can be brought to market so it is hard to determine what investment would be required.

The company does not yet have financial resources to bring a product successfully to market, nor does it explain where the funds will come from.

This reviewer does not believe the proposed team has the necessary financial resources to successfully bring the product to market in a commercially viable manner due to the lack of security and content protection.

The company is awaiting a commitment from an investor to provide the cash for this project. But this technology market is very soft right now so substantial sums will be needed for marketing in the future. How well those funds can be raised will be critical to bring the product to market in the near and long term.

16.	Availability of marketing capability to successfully bring product to market.	Percent
	Excellent. Available marketing capability to successfully bring product to market.	4.2
	Very Good.	22.4
	Good. Evidence of collaborative associations, such as local business, with marketing capability to successfully bring product to market.	30.6
	Fair.	20.4
	Poor. No evidence of the marketing capability to successfully bring product to market.	22.4

Samples of Reviewer Comments

From Competitive Proposals –

Based on previous experience with this company chances are pretty good that the new device will be properly and successfully brought to market.

From Non-competitive proposals –

This reviewer is not convinced that the marketing capability exists in the current plan to make this commercially viable. While the market is high-dollar, it is also fiercely competitive with sophisticated products that will be hard to compete with.

The marketing capability will have to be strengthened considerably to make this commercially viable.

The PI is the lead salesman for the technology at this point and it is not clear to what extent success has been had up to now as a predictor of future success.

17.	National/international market growth potential.	Percent
	Excellent. High national/international market growth potential well described in proposal.	15.1
	Very Good.	17.0
	Good. Adequate national/international market growth potential well described in proposal.	39.6
	Fair.	17.0
	Poor. No discernible national/international market growth potential.	11.3

Samples of Reviewer Comments

From Competitive Proposals –

The need for this device is credible and well supported by the proposal.

The PI does an excellent job of showing initial sales will be limited to cotton farmers and that modifications will be needed to expand the market.

From Non-competitive proposals –

The need for this device seems inflated.

The PI incorrectly believes a US Patent will protect him in world markets. This product is very easily copied and the international market share will be low.

The economic impact statements in the proposal are inflated, unrealistic and undocumented.

The potential for economic impact will be constrained by the competitiveness of the resulting product, the demand for the capabilities (which is not established), and the price/performance that the market will bear.

This is difficult to assess from the proposal. If successful, it will be a very useful treatment, but the extent of the market is difficult to assess at the moment. It may well be too expensive for Third World countries where the disease is most prevalent.

This is a tough call at this point as noted above for several reasons. This is apparently the only company commercializing this medical test. The absence of competitors is always disturbing because it may mean that there are no competitors because there is no significant market for the products? Given the absence of IP in this area as well as trade secrets, any company entering into the fray has freedom to operate. Marketing and sales could use outside help.

18.	Potential for creating jobs in Oklahoma, considering both the probability and number.	Percent
	Excellent. Potential for creating jobs well described and justified.	5.3
	Very Good.	12.3
	Good. Potential for creating jobs adequately described and justified.	38.6
	Fair.	31.6
	Poor. Potential for creating jobs not addressed in proposal.	12.2

Samples of Reviewer Comments

From Competitive Proposals –

While the probability is high to create sufficient jobs based on this research, it is unlikely for this project to have a major economic impact.

The proposal demonstrates this project could have a major impact on Oklahoma jobs within two years.

From Non-competitive proposals –

This research will not lead to manufacturing, marketing or distribution jobs in Oklahoma.

The projections for company growth, creation of jobs, and the economic potential impact on OK given on pages 38 through 41 seem highly optimistic and inflated. They appear to be unrealistic and unachievable.

Since the company does not have any full-time employees, has no manufacturing facility in Oklahoma and no distribution capacity, and all of OCAST funds will be spent outside of Oklahoma, it is hard to see how this project will benefit the Oklahoma economy.

The PI expects to enlarge his research team by adding a few staff members. This is not an impressive economic impact.

19.	Potential of short-term impact (within 5 years of project completion) on the Oklahoma economy. For projects that have a formal regulatory delay or other commercialization delay that is justified and explained in the proposal the question may reflect a longer period after project completion	Percent
	Excellent. High potential for short-term impact well assessed in proposal.	5.4
	Very Good.	9.1
	Good. Reasonable potential for short-term impact well assessed in proposal.	30.9
	Fair.	38.2
	Poor. No apparent potential for short-term impact.	16.4

Samples of Reviewer Comments

From Competitive Proposals –

There are a lot of competitors in this and related areas, so the company will have to position itself as the leader early on.

There is a high probability that this project will lead to a successful product. The marketing mechanisms seem to be in place. The manufacturing of the device is planned to take place in Oklahoma. The technical know-how and expertise will also stay in Oklahoma.

From Non-competitive proposals –

The proposal failed to identify how the research would have an economic benefit to the company.

This is a high-risk technical project. First, it is uncertain that the product can in fact be produced. Second, it is not clear that the medical benefit will create a market niche for a startup company.

It is difficult to see how the investigators will develop a prototype delivery system in 2-5 years based on the research plan proposed. This topic should have been addressed in the proposal.

While the probability is high to create a few jobs based on this research, it is unlikely for this project to have a major economic impact.

20.	Potential for creating jobs that will enhance the technology base in Oklahoma.	Percent
	Excellent. Potential for creating jobs that will enhance the technology base in Oklahoma is well described and justified.	3.7
	Very Good.	11.1
	Good. Potential for creating jobs that will enhance the technology base in Oklahoma is adequately described and justified.	38.9
	Fair.	27.8
	Poor. Potential for creating jobs that will enhance the technology base in Oklahoma is not addressed in proposal.	18.5

Samples of Reviewer Comments

From Non-competitive proposals –

The technology base already exists. Nothing new will be added.

Very little advanced technology will be developed or used in this project.

VI. Reviewer Suggestions for Proposal Writing

These reviewer comments were written as suggestions to guide the research team. None of these comments came from competitive proposals. Competitive proposals often have specific reviewer comments that offer additional ideas for the research team.

The PI and Co-PI need to seek mentoring on preparation of applied research proposals. A statement of the hypothesis and the presentation of possible initial outcomes and impact best serve a research plan. Then background material rounds out the hypothesis and set of proposed experiments indicating where new knowledge is needed as the science moves forward. Then comes a complete and clear description of the experimental design, protocols, and expected outcomes along with statistical methods for handling data. Potential pitfalls and how they can be overcome using alternative approaches is also recommended. The budget section, as written, did not make complete sense and one page was out of place.

This proposal has been "boiler plated" together from other proposals. The authors should spend significantly more time and effort in responding to the requirements of the OCAST solicitation.

This proposal has not been prepared following the required format. A proposal is more than completing the forms and adding two pages of text.

This proposal could have been strengthened by (1) preliminary data demonstrating that this group of investigators can produce chemicals with these desired properties and (2) a more specific medical application. As the authors state on page 44 the methods for extracting a key ingredient has not been developed and no plan is included for the process. Yet, this is a very critical step for the success of the project.

The research plan is lacking in detail as to the shortcomings of the current methods and what new techniques are to be investigated. It is not clear if the training techniques are to be computer based, hands-on-training, or a combination of both. The economic plan has similar deficiencies; it is not clear how the company plans to make money by having better teaching methods

This proposal does not provide all of the information that I as a reviewer need to be able to determine whether it should be funded. It would be helpful if the proposal gave more detailed answers to the following questions:

- What specifically is being proposed? This includes a description of the proposed program, its major components, how it functions, its competitive advantages in the marketplace, etc.
- What research questions are to be answered through the proposed work? The OARS program is designed to fund research that leads to commercially successful products. The research component of a proposal is important; if a project does not have a research component, then funding through some other source (venture capital, private investors, etc.) is a better option.
- What are the qualifications of the PI and support personnel? Typically, this question is answered by a detailed resume of the key personnel, together with specific information about their qualifications for the proposed project.
- What is the research plan? How will the research be conducted?
- What processes, facilities, and equipment will be used to implement the research plan? Are there contingencies that need to be taken into account?
- How will the proposed work lead to an economically successful product, process or service? Are reasonable economic projections included in the proposal? Are they documented so that a reviewer can quickly understand and evaluate them? Do they indicate a clear understanding of the market (who the major competitors will be, what market share is to be expected, what price structure is reasonable, etc.)?

A proposal writer needs to remember that reviewers have many proposals to review, and that the OARS review panel considers many proposals when it meets. Proposals that clearly articulate both the research plan and the economic benefits do much better than proposals that are incomplete or do not communicate the needed information clearly.

I would encourage the PI to work out a detailed research plan that includes collaboration with experts and input from potential military collaborators as to what is actually needed and then resubmit the proposal with this detailed plan.

As proposed, the potential for economic impact is fairly low. If the PI works with customers to clearly define the requirements for the research, I think there is a potential for economic impact.

It is difficult to recognize this application as a research proposal. Since the PI has received no formal training in how to conceive of and carry out scientific studies, it is recommended that he team up with colleagues who have such training.

The premise of the proposal seems to be that the technology is an exciting new area and there must be some medical application that can make use of it. The authors should consider turning this around; that is, first define an important unsolved medical problem and then use some form of the technology to solve it.

The PI is an accomplished researcher with an excellent research and publication track record. This proposal demonstrates his ability to write a cogent and compelling research proposal. However, he does not seem to fully understand the mission of OCAST since he has had two previous OCAST proposals that did not lead to a commercial product.

This appears to be a combination of two phase I projects. As the proposal stands it is very difficult to evaluate as one project. A Phase I project on topic one to determine which specific chemicals would be tested and what tests would be run would allow a defined research plan and some real milestones rather than a general plan which is not well defined, but really contains an extremely broad class of all treating chemicals to be looked at. If there were some definite chemicals to be tested in some specific tests then the work results could be evaluated. The other work looks like a much better designed project and should be submitted on its own for possible funding. I am not sure this proposed effort is well enough defined to produce much insight or a solution to the problem.

The process presented in the research plan is not systematic nor hypothesis driven.

There are many spelling errors in the proposal.

The proposal needs to have an identifiable Research Plan that details the project. The plan must convey to the reviewers the competence of the research plan.

The basic idea sounds exciting, and if successful the market is enormous. However, the lack of a technical description of what they are going to specifically do and how they will do it makes the proposal very unconvincing.

It is not clear from the application, what data will be collected and how this data will be used to improve the device. What are the deficiencies of the current device? Why does the device need to be improved? What benefits might result from such improvements? Will these benefits have a measurable economic impact?