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Translation

*Translation and Analysis of the Documents I am Single and that is Fine, Ten Signs of
Financial Problems, The Practical Side of Singleness, 12 Steps to Change, and Manual of
the Costa Rican Fire Corps*

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Abstract

The purpose of this research was to translate and evaluate the most common procedures that are found in the translations of Centro de Excelencia Church and Manual of the Costa Rican Fire Corps. Multiple translation procedures and techniques were applied to achieve communicative texts with accuracy and naturalness; furthermore, different theories and authors were studied to support, apply, and reach one the most important aspects that every translation must have the invisibility of the translator within the texts.

Chapter I

Introductory Framework

In history, there have been many theories of translation since the beginning of language; however, language is one of the most complex and detailed phenomenon that human beings have acquired. In order to learn and comprehend about translation authors, the theories and methods, and how it affected another cultures, there must be an introduction of what language is, the main researchers of this topic, and how this phenomenon was developed.

1.1 Background of the Study

Language has been a deep topic which is still studied by researchers. First of all, it is a need to comprehend what language is to move on and understand what translation is all about.

According to the Cambridge Dictionary language is “a system of communication consisting on sounds, words, and grammar or the system of communication used by people in a particular country or type of work” (n.d.).

Furthermore to support this definition, professor Whorter (2004) at the Institute of Manhattan mentions that language is not only about words, but also grammar, and these two elements together are useful to produce utterances that will reflect experiences, the environment we live for, and impressions of our lives, also they will affect people and events that can be around us.

Based on these two definitions, it can be said that language is the combination of words, grammar, and sounds that can affect the people that are around us. This is important

because when a translation is done into another language, this will definitely affect the people that are reading, hearing or seeing the translation; for example, by the sign translation.

One of the elements of why the investigator is passionate about translation is the old history that contains this subject. The history of translation does not come alone but it comes together with the origin of language.

The language origin is based on the Tower's Babel myth which is focused on the book of Genesis chapter 11 (6-9). The story tells that in those times the humankind had a unique language, and those peoples were working to create a city; this city was going to be as powerful, stronger, and higher as God. He saw that as the humankind had a unique language, everything could be possible, so he decided to give different languages to all people. However, this origin is considered a myth, and according to different studies every language has linguistic explanations (Pardo, 2013).

Researchers have mentioned that from this event, translations were needed for communication with other places. The etymology of the word translation in Latin is "*transducere*" which means "to lead across" (Merriam Webster, n.d.).

Nida who was one of the greatest linguists of bible translations places the beginning of translations with the work named *Septuagint* that seems to be one of the oldest translations of the Old Testament from Hebrew into Greek. This translation was done by 72 translators. The remaining books of the Septuagint were translated in next two or three centuries. This researcher established that in those times translations were considered to be

a science; however, this theory was rejected by other investigators in the second half of the century (Pardo, 2013).

On the other hand, other researchers place the beginning of translation soon after the development of writing. Before the bible translations, one of the early records founded in Egypt were some bilingual and trilingual inscriptions; some of the inscriptions were found in clay tablets with bilingual vocabulary in Sumerian and Eblaite. One group of tablets contained financial data and the other group contained ritual and literary texts (Tracey, n.d.).

One important fact of the translation history that cannot be left aside is the earliest English translators that appeared to become famous in those times. One of the oldest ones was King Alfred that lived from 849 to 899. He was a successful military, and learned Latin when he was nearly 40. He translated important texts from Latin into Old English such as *Gregory the Great's Pastoral Care* and *The First Fifty Psalms of the Psalter* (Tracey, n.d.).

Another important early translator was Geoffrey Chaucer (1343-1400). He was recognized as the father of the English literature; moreover, the languages he mastered were French, Italian, and he knew Latin. He translated *Le Roman de La Rose from French into Middle English and Virgil and Ovid* from Latin, and *Boccaccio* from Italian (Tracey, n.d.).

William Caxton was another great early translator that lived from 1415 to 1491. He was known as the printer of the first printed book that was *The History of Troy*. He spoke French and decided to translate the book mentioned before into English. He translated about 25 books before his death (Tracey, n.d.).

Another important fact of the translation history is that in the second half of the 20th century new scholars investigated more about translations and the linguistic approaches,

and through those investigations new theories and disciplines arose. For instance, it appeared the study of traductologie or “traductología”. This specific study consists on two fields: The product; the text that has been translated, and the process; the act of producing the translation (Pardo, 2013).

This study what tries to explain is that traductologie and translation are not the same. Translation is about the practice; of doing the translation itself. The traductologie is the one who studies and makes investigations to know more about translations (Pardo, 2013).

The information aforementioned is important because it shows that the origin of language is related to the origin of translation. It clearly shows that translations were a need to communicate with other people when languages were spread out. Many scholars have been studying this topic to have more knowledge on how translations work.

Besides the history, another aspect why the investigator decided to make this research is because of all background that can be found in another culture, the idiomatic phrases, and the knowledge that can be acquired all the time.

Translation is a subject that requires a lot of concentration and the ability to recreate what the author wanted to say in the source language. The ability of recreating a certain moment in a written text can be a gift; however, it can be perfected by practicing.

That is one of the most exciting points that the investigator loves about translation, the element of personification. By the point of view of the investigator, one of the key points to translate accurately is the ability to know the background of the author and text.

But not everything is about the author or the writer, but the audience, so in basic words, the translator must personalize both elements and be careful.

Here the translator must have the writer in mind to translate in the correct way and use the right words to give the same feeling to the text. In addition, the translator must know the audience to see if the corresponding audience will understand what the translator tried to say. The point of view of the investigator is that translating is not only about words but also understanding the mind of the audience and author to render an accurate translation.

One of the reasons why the investigator is passionate about translation is that the background of the text needs to be investigated in order to know what the translation will be all about. Without background there is no base and without it, the translation will be inaccurate.

The culture and idiomatic phrases of a translation must be part of the study due to the fact that vocabulary or phrases are not the same in one country or the other. For example, if the culture or context of the translation is not well studied, the translation can cause misunderstandings that can lead to a small problem or something worst, a war.

Something the investigator loves about culture or idiomatic phrases is that they are living elements. These elements in a context of the old time can mean something, but in the new century those elements that had a specific meaning in the old century could have disappeared or changed.

Phrases or words depend on time, since they are always going to be changing and that is something that will never change. That is one of the reasons of why a translation

must be studied first. For instance, the word “nice” means nowadays a compliment, but in the past this word used to mean “*silly, foolish, and simple.*” Another example can be the word “awful” which used mean “*worthy of awe*” for a variety of reasons. There used to be phrases like “the awful majesty of God” (Ideas Ted, 2014).

Imagine translating a phrase without knowing that the original meaning was the one mentioned before. The translation could cause deception instead of honoring the majesty. The reason of learning every day and how a simple word can impact a society is one of the aspects the investigator is making this research.

Another point of view that the researcher enjoys about translation is the key element that anything can be subject to translate, from a small poem created by an unknown author to a scientific article done by famous scientist. So it means that translation has a huge range of fields in which anything can be translated with the basics of the elements mentioned before.

In general what is also very enjoyable of translation is the different modes that a person can have to translate in. For example, translation is not only about written texts but also verbally, this is called interpretation or oral translation. The interpretation is similar to translation; however, the main difference is that one is done orally and the other one is written. Both studies are too close linguistic disciplines (Language Scientific, n.d.).

These two disciples have their differences. For instance, a translator who is focused on written texts, he/she will have to have the knowledge of the target language and its culture where the text was originated. One advantage of why the investigator prefers the

written translation are the tools that can be used such as dictionaries, internet and reference materials to have a clear idea of what is being translated (Language Scientific, n.d.).

On the other hand, interpreting is totally different to translating because the interpreter has to translate without using dictionaries or reference materials. The tools that an interpreter must have in this case are strong listening skills, great ability for memorization and excellent public speaking skills to communicate well the message (Language Scientific, n.d.).

1.2 Research Question

The present investigation aims to provide an answer to the following question: What is the effect of the procedures and methods used to translate the documents “12 Steps to Change, 10 Signs of Financial Problems, I am Alone and that is Fine, and the Practical Side of Singleness” from Spanish into English for Centro de Excelencia Church and “Manual of the Costa Rican Fire Corps” from English into Spanish?

1.3 Purpose of the Study

One of the key elements the investigator aims to make this research is to know the different procedures and methods that can affect a translation. In addition, through the color coding the investigator wants to identify which procedures or methods are the most common in a specific translation.

Another aim is to show how important is to use the correct procedures or methods with the correct tone and words in a translation, and also how they can affect the meaning of a document. Here the elements of personification can be applied due to the fact that when applying a specific procedure or method, the translator must think about audience and

what the document or author wanted to say, and from this point, different elements can be applied to convey the correct meaning of the text.

These points mentioned will benefit future translators that want to make excellent and precise transitions without leaving apart procedures, methods, grammar, words and personification.

The color coding will be the element that will help the investigator to solve which are the most common procedures that in a specific translation are found. Also the color coding will help to differentiate the scale of formality and which procedures were not used in the translation.

1.4 Objectives

1.4.1 General Objective

To analyze the effect of the procedures and methods used to translate the documents *12 Steps to Change*, *10 Signs of Financial Problems*, *I am Alone and that is Fine*, and the *Practical Side of Singleness* from Spanish into English for Centro de Excelencia Church and *Manual of the Costa Rican Fire Corps* from English into Spanish.

1.4.2 Specific Objectives

- To translate the documents *12 Steps to change*, *10 Signs of Financial Problems*, *I am Alone and that is Fine*, and the *Practical Side of Singleness* from Spanish into English for Centro de Excelencia Church and *Manual of the Costa Rican Fire Corps* from English into Spanish.
- To apply various translation techniques to the documents in order to achieve communicative texts.
- To evaluate the effect of the translation techniques applied on the documents.

- To create a glossary with the most relevant terminology found in both texts.

1.5 Limitations

The investigator has found many limitations to deal with. For example, one of the main limitations is time. Translating a document is not as simple as it sounds because it involves many elements such as investigating the background of the source text and also the element of investigating takes a lot of time because the information needs to be read carefully. Also in the element of time is the size of the text. It is always recommended reading the translation before starting; however, sometimes that is not possible because the translation is really big.

Another point is the vocabulary. Most of the time when translating, the translator must familiarize with the vocabulary because if not, he/she is going to have a hard time to convey meaning. The element of time is also involved due to the fact that when text is too technical, the translator must take some of his/her time to look up for the words or phrases that he/she is not accustomed to.

Another obstacle is the writing of the document. Usually it happens that the document is not well written and when that happens, the translator must figure out how to understand the text, and sometimes even he/she must correct the document. When correcting the document, the translator is taking the risk to misunderstand the situation and give another message that can cause in the worst of the cases a war or put the lives of people in danger.

Other aspect is the culture and time when translations were done. If culture is not well studied or understood, it is going to be really difficult to understand idiomatic phrases of the text because in culture there are many idioms that seemed to be understandable;

however, the translator must go in the past to understand the real meaning of idiomatic phrases.

Also as words are always changing, the translator must look up the meaning of certain words depending on the time of the context not to give inaccurate information.

Another element considered as a limitation is the element of knowing the audience. When doing the translation, the translator must investigate to what type of people this translation will be affecting because the majority of time translators write without knowing the type of audience he/she will be writing to. So looking the correct vocabulary, tone of voice, and other elements can be a limitation due to the fact that the audience will be different all the time.

So by looking at these elements, limitations are not only related to time, but also to vocabulary, words, idiomatic phrases, culture, and audience. The majority of time, these elements can affect the translation not matter how excellent a person can be to translate.

Chapter II

Theoretical Framework

The second chapter deals with the elements that help a translator to render a accurate translation. Although there is no “perfect translation” as perfection is a matter of perception, the tools analyzed in this section are of paramount importance, since they mark the translator's road map towards a successful final product: The text analysis, scales defined by Peter Newmark, and translation techniques are the core of this section.

2.1 Text Analysis

To hand in a good translation, there are different steps that translators must follow and three general processes to complete it: One is comprehension, second the transfer phase and third revision. One of the first steps or the first step that a person should do before doing a translation is to read the document to comprehend or to be familiarized with it. According to Newmark (1988), reading a text is a really valuable recommendation for two important purposes. One is to understand what the text is about, and the second purpose is to analyze it through the point of view of the translator. This means to discover the intention and purpose of the text and also recurring problems that can be found in the translation.

The general reading is a useful tool to understand the general idea of what the text is trying to inform. Elements such as dictionaries, encyclopedias, internet will help the translator to have the basic idea of what is about to translate. So there is no excuse for not making a general reading.

After doing the general reading, the next step is to do a close reading. The close reading, according to Newmark (1988), is necessary for any challenging text. This will help the translator to identify the main problems or difficulties that he/she can find in the translation. For example, unknown vocabulary such as words that could be used in a figurative or musically way; it also can contain technical words, acronyms and even a text that is colloquial should be read by close reading due to the fact it can have idioms and idioms are never easy to translate unless a good research can be done.

In the close reading, the translator will find the intention of the text. This aspect is important to identify because it will help the translator to comprehend what the reason of the text is and what is the main purpose of the translation. One of the ways to identify the intention is by the words, phrases or grammatical structures the writer uses (Ebensgaard, n.d). As Newmark (1988) says the intention of the text represents the “SL writer’s attitude to the subject matter”.

2.1.1 Text Styles

From the intention of the text, the translator will find different types of text styles. One of them is the narrative text; this style is characterized for a sequence of events that occur. The emphasis is on verbs. The second styles is the descriptive, this one is focused on linking verbs such as a text that is describing someone.

The third style is the discussion. These types of texts are directly related to abstracts nouns, verbs of thoughts, mental activity, logical arguments and connectives. Finally, dialogue; this style focuses on colloquialisms and phaticisms; basically on poems.

2.1.2 Stylistic Scales

The investigator considers stylistic scales as something that can define if a translation is well done or not. The reason of this is that these elements give special details for translations to have the enough emotional aspects in some texts or the specific formality for documents to be understandable and enjoyable to read. In basic words this is something that cannot be left aside.

2.1.2.1 Scale of formality

One of aspects that a translator must be aware of is the different kinds of formality or registers that can be found in a text. When a translator faces a translation, he/she will find 8 types of registers according Newmark (1988) these are they: Officialesse, official, formal, neutral, informal colloquial, slang and taboo. However, the researcher will focus on the 6 most common types of registers found in texts and will show some examples of the most formal to the lowest scale.

One of the first examples the researcher wants to show is the scale of the most common highest formality which is formal; for example: “You are requested not to consume food in this establishment” (Newmark, 1988). From there the formality will be descending to neutral, Informal, colloquial, slang and taboo. The last one taboo is one of the less common scales one example would be “Lay off the fucking nosh” this of course is a type translation really hard to find.

2.1.2.2 Scale of Generality or Difficulty

According to Newmark (1988), there is also a scale of generality or difficulty in which the translator by only doing the close reading will identify such scales. That is why the close reading is so important because it will tell him/her how difficult a translation can be and that based on the scale, a text can be technical which refers to vocabulary or phrases that only an expert in a certain field will understand. Educated terminology which is

vocabulary or texts that are understandable for non experts on a field but it is still a little technical or complex. Neutral uses basic vocabulary. Popular uses vocabulary that is simple to understand and simple uses a vocabulary that is very easy to understand (Newmark, 1988).

2.1.2.3 Scale of Emotional Tone

In translation is also considered the aspect of emotional tone. It varies depending on the text. For example, according to Newmark (1988), a text that has a lot of technical words will always have a “factual” emotional tone which refers to technical or educated texts. The other emotional tone is Intense; this tone is well known because it uses intensifiers such as enormously successful. Finally the “warm” emotional tone is basically used to describe stories or people.

To continue with the process of translation, one of the aspects of reading a text is the identification of what the writer wanted to express (Newmark, 1988).

2.1.3 Text Function

There are three general types of functions that translators will have to face when doing a text translation and this depends on the text or the type of writer.

2.1.3.1 Informative Text

In general there is always going to be different types of texts that will have different purposes. In the case of the informative function as the word states it, it is to inform the society or people about something. These types of texts are the most common to translate due to the fact that translations are usually given to inform about something important. For instance, the texts can be articles, scientific papers, news papers, technical reports or even an agenda meeting (Newmark, 1988). These are texts that commonly translators face every day when doing translations.

2.1.3.2 Vocative Text

The other type of text function is the vocative. The vocative function is focused on the reader; the reader is most important element in these kinds of texts. What characterizes vocative texts is the relationship between the writer and the reader. A second aspect that identifies vocative texts is that language is really comprehensible to the reader due to the fact that the reader is the most important for these kinds of texts. Some examples of these types of texts are publicity, propaganda, persuasive writing, and more (Newmark, 1988).

2.1.3.3 Expressive Text

Finally the expressive function is going to be explained. This function is very particular because is based on the mind of the speaker or writer. This function expresses the feelings of the writer or speaker, and automatically forces the translator to transmit the same feeling in the translation. If the same feeling is not achieved, the purpose of the translation is not going to be met.

This translation with expressive language is considered one of the most difficult because the translator has to have the gist and inspiration to try getting the same feeling. The kind of works found in these type texts are poetry, short stories, novels and more. However, not only those works can be expressive, also they can be autobiographies, essays, personal correspondence or even authoritative statements such as political speeches, philosophical and many more texts (Newmark, 1988).

2.1.4 Type of translation

In translation there are different methods that can be applied when doing a translation. These methods are applied to make translations more natural, precise, and faithful and sometimes these methods will help the translator to render an accurate final

version. However, there has been a controversial problem that translators face which is translating literally or freely.

In this investigation the semantic and the communicative methods are the elements that are going to be explained.

2.1.4.1 Semantic Translation

The semantic translation according to Newmark tends to lose meaning because the aesthetic element, the beautiful and natural sound of the source language text, has more value (1988). Newmark mentions that there are two differences between faithfulness and the semantic method. He states that faithfulness is uncompromising and dogmatic and that the semantic translation has the elements of being more flexible, creative and allows the intuitive empathy of the translator with the original text. This method is used more in expressive texts (1988).

2.1.4.2 Communicative Translation

On the other hand, there is another method that is also really effective, the communicative method. This translation method focuses on rendering the exact meaning of the source language text. The content of the target text should be acceptable to read and comprehensible to the readership. This method is used more in informative and vocative texts.

According to Newmark, when he compared both the semantic and the communicative methods, he noticed that the semantic translation tends to be more economical than the communicative method. The semantic method is used for expressive texts, and the communicative is involved in informative and vocative texts (1988).

It is important to establish that there are differences between those two methods. On one hand, the semantic translation is personal and individual; this means that the base of the

translation is on the author; whereas on the other hand, the communicative translation is social and focuses more on the message and tends to be simple, clear and brief. Another difference is that the semantic translation has to be interpreted and the communicative translation has to be explained (Newmark, 1988).

There is another small difference between those methods. The semantic method is faithful but is more literal, and the communicative method is faithful and yet freer. Sometimes the semantic translation is considered to be a little inferior to the original text due to the loss of meaning, and the communicative is considered a little better because it gains force and clarity (Newmark, 1991).

According to Newmark (1991), in the semantic translation, the translator has no right to correct the original text, so the mistakes must be pointed out in a footnote. On the other hand, the communicative has all necessary corrections that need to be done such as improving the logic and style of the original and to clarify ambiguities and jargons of the usage of the writer.

The semantic translation is often considered the work of one translator; the communicative translation is considered the work of more translators such as a translation team. Moreover, semantic translations tend to be written in words, clauses and collocations while the communicative translations are usually sentences and paragraphs (Newmark, 1991).

The researcher has seen that in spite of the differences this does not mean that the communicative is better than the semantic method. It means that those methods will work better depending on the text. Also according to Newmark a text cannot be a hundred percent semantic or communicative. Newmark states that a translation can be less or more semantic or more or less communicative. He mentions this can change constantly in a

sentence or paragraph. However, the majority of texts are communicative rather than semantic due to the fact that most of the translations try to inform or persuade people (Newmark, 1991).

2.2 Translation Techniques

When a translation is done, people do not know how many procedures are involved in the translation. These techniques are useful to help the translator to convey meaning, make the translation accurate and communicative. In this section, the researcher will be explaining 12 techniques that can help a translation to be effective.

2.2.1 Transposition

Transpositions or also named “shifts” is one of the procedures most used in text translations because the main purpose of this technique is to change the grammatical structure of the sentence from the source language to the target language (Newmark, 1988). The origin of the transposition name comes from a linguistic theory done by Bull, Eally, tenslere and others. This procedure according to many experts is so easy to use that is considered to be the soul of translations in general. Transpositions were originally studied by Panneton in his thesis of traductologie in the University of Montreal. Another important aspect related to transpositions is that the main purpose is not only to change the grammatical structure of a sentence but also help the translation to be more natural in the lexica, structure, and statement in the target language (Vázquez-Ayora, 1977).

There are different types of transpositions that consist on the same basis that is to change the grammatical structure. The investigator will mention at least four types of transpositions.

One of the most common types is the one that changes the grammatical structure of an object from singular to plural or the other way around (Newmark, 1988).

Other type of transposition is changing the gerund to verb noun (Newmark, 1988).

Sometimes translators make the mistake to translate the gerund as a literal translation and fall in the error that in Spanish is not possible. Of course there are other options to change gerund; nevertheless, that is one of the best options.

One third common change of grammatical structure is when the sentence is too literal. The fourth option is to change the grammatical structure of a sentence is to change from complex sentence to a coordinate sentence or two simple sentences (Newmark, 1988).

2.2.2 Modulation

Some experts such as Vinay and Darbelnet say that Modulation is related to the change of point of view, perspective, and thought. According to their criteria, modulations are used when literal translation is not a trustable procedure to apply. There are eleven categories in which modulations are separated (Newmark, 1988).

According to Vázquez Ayora (1977), modulation is a procedure that can help to avoid literal translation. He mentions that the main purpose is to change the point of view or as he says the “base metafórica”; in other words, the meaning is the same but the symbols can be different to the fact that cultures are different between each other. In the point of view of the investigator, this is why learning the background or culture of the target language is really important because to make a modulation the translator must investigate if there is an object, phrase, or word that the audience will understand.

To make a successful modulation is to ask a simple question (how does we say something in our language?) With this question, a modulation can be successful because then the phrase or word will be more natural than literal. Whorf explains that the point of

view is related to the language experience or reality. Here the theory will be seen with an example. “Make your check payable to.” In this case, a literal translation would be “Haga su cheque pagadero a”; on the other hand, the modulation would be “libre su cheque a nombre de”. The theory of Whorf is been applied in the second case because the phrase is being said according to the experience of language and of course that is the way that it sounds more natural (as cited in Vázquez-Ayora, 1977).

For beginner translators, modulation is a process that sometimes they use; nevertheless, most of the times one of the most common mistakes for them is they do not know how to apply this technique due to the lack of knowledge (Vázquez-Ayora, 1977).

One aspect of modulations is that the modifications that they produce are a risk that sometimes translators must take because if they are not used, they can affect the meaning. The translator must investigate very well to not bring unknown elements that can affect the understanding of the audience. (Vázquez- Ayora, 1977).

2.2.3 Omission and Amplification

The omission procedure consists on reducing the amount of words that text has; it is the opposite of amplification (procedure that later on will be explained).

This technique is one of procedures that amateur translators are not accustomed to use due to the fact they are afraid of affecting the meaning of the text. For beginners, the fidelity of the text is related to the words that are being translated (Vázquez- Ayora, 1977).

What amateur translators try to use instead of omission is the amplification, and they fall in the mistake of using more words than necessary, making the translation less natural and accurate. They believe that the most words that are being translated, the better it will be, and if they omit ideas or words, the translation will be poor because they did not translate each word of the source language to the target language (Vázquez- Ayora, 1977).

Nevertheless, those translators at the beginning do not know that fidelity is related to rendering the exact meaning and respecting the ideas that a text has. Fidelity according to Vázquez-Ayora (1977), means to translate the exact meaning of an idea; no less, no more, together with the intention of the author.

So basically the omission is another procedure that must be used carefully but without fear of losing fidelity because sometimes language itself forces translators to use omission to help the text to be more natural and also for not over translating something that can be omitted (Vázquez- Ayora, 1977).

Amplification; on the other hand, as mentioned before is a procedure that focuses on expanding the phrases or words (Vázquez-Ayora, 1977). The point of view of the investigator is that amplification is an useful tool to explain or express an idea in a better way.

In addition, according to Vázquez- Ayora (1977), the amplification is used because the language forces it. He mentions that the Spanish language tends to use more words due to the use of articles and prepositions. Articles and prepositions in Spanish are necessary to provide naturalness to the text. Also these elements will help the text to be more communicative.

Another point of view of the investigator is that Spanish tends to use more words than English because in the English culture, people tend to go more straight to the point than Spanish speakers. This since people who speak Spanish explain details that might not be necessary to give, but that is another reason that cannot be avoided. Culture also influences the translation procedures.

Newmark (1988) considers that amplifications and omissions are imprecise procedures because is something that translators apply intuitively; however, the researcher sees those procedures as excellent elements to make a translation more communicative.

2.2.4 Explicitation

This procedure is similar to amplification. As mentioned before, amplification was a procedure that consists on expanding the words for the text to be more comprehensible and also because the language forces it.

Nevertheless, explicitation is a little different because it is basically an explanation of what is implicit in the context. Maybe in the source language the idea is comprehensible but there is implicit information that needs to be explained for the text to be more comprehensible. It is important to make clear that there are three types of explicitation: one that is explicative, other is specific, and the last one is a manifestation (Vázquez- Ayora, 1977).

For the investigator, explicitation and amplification are procedures that most of the time go together due to the fact that when there is an explanation of something which is not in the text and it is added that is also considered an amplification.

One of the key elements that translators must be aware as in the other procedures is that adding an explanation will not affect the fidelity of the text so they must not doubt and be fearless and secure what they are making explicit (Vázquez- Ayora, 1977).

For example, “The secretary of State testified against the provision that automatically excludes all OPEC members” the translation would be “En las audiencias previas el Secretario de Estado argumentó en contra de la disposición que excluye ipso facto a los miembros de la OPEC” (Vázquez- Ayora, 1977). In this example it clearly shows that is explicative.

2.2.5 Literal Translation

Literal translation is considered a very old procedure because that is the way most translators start and there are some experts that say that literal translation is as old as translations in general. This procedure is really important to know because basically this the base that any translator should know by default. This technique is a procedure as the ones mentioned before and might be one of the simplest ones (Vázquez-Ayora, 1977).

Literal translation is defined as translating the sentence to the target language the way as it looks in the source language. No change of structure must be done for this technique and the meaning must be the same. A simple example would be “She is reading” and the literal translation would be “Ella está leyendo” (Vázquez Ayora, 1977). This example shows that the sentence contains the same structure and the same meaning, so the basis of a literal translation has been accomplished.

The investigator considers, in his point of view, that literal translation is not a bad procedure as many authors consider it because many of them want to avoid it as much as possible. However, the researcher considers that as any other procedure it should be used carefully and sometimes the text will force this procedure to be used.

2.2.6 False cognates

False cognates are an aspect that appears in all translations; therefore, that translators must be really careful about them. On one hand, cognates are words that are similar in English and Spanish. They can be similar in structure (shape of the word) or look the same in pronunciation (Fort Bend, 2012). Some of the most examples of cognates are the words (Artificial, chocolate, animal, hotel etc...). On the other hand, false friends are defined as words that are written similar in shape and the pronunciation seems similar but

they have a completely different meaning (Ford Bend, 2012). For example, the words (carpet, pan, actually, arena etc...).

This verbal slip or misreading mistake is something that beginner translators make all the time due to certain elements such as the lack of experience, lack of knowledge of the target language or even for the simple fact that the corresponding research was not done. The last aspect happens usually to experienced translators.

This mistake according Riccardi (2002), can happen to any translator and the reason is that sometimes this happens unconsciously. She mentions that this mistake happened to her while making a translation of Italian. She mentions that when translating into English she used a false cognate which was “superstitious” and the word she had in Italian was “superstite.” This mistake identified when the reviewer looked at her work. She stated that this happened to her unconsciously and she was unaware at the time she was making the translation. The point of the researcher is that these types of mistakes can happen to any translator; however, by the researcher point of view, one of the ways to correct this or be more careful is always to be doubtful about words that might be confusing. This recommendation will help to avoid this issue that is very common to beginners or even experienced translators.

2.2.7 Compensation and Equivalences

This procedure is most used when in the text translation is hard to find the same and natural equivalence or when there is a loss of content when the text is translated. According to Newmark (1988), compensation would work in different scenarios. Loss of meaning, sound effect, metaphor or pragmatic effect compensation can be in another part or in a contiguous sentence.

There will be always in texts loss of meaning because when translating there always going to be exceptions in difficult texts where the translator cannot omit something that might be important but what he/she can do is to compensate the phrase or word in another part of the sentence.

The procedure is not well known for translators due to the fact that is not very mentioned in theories or practice of translations. Nevertheless, this technique is so important as the others because it accomplishes the linguistic levels to compensate the minimum loss of meaning that could be involved (Vázquez- Ayora, 1977).

Besides loss of meaning in a phrase or sentence, one of the purposes of compensation is to create a balance of all information that can be found in a sentence. In addition, compensation does not only apply to the content but also to the tone and intensity of the text (Vázquez-Ayora, 1977).

According to Vázquez Ayora (1977), each text has its own emotional tone and intensity and the point of compensation is to try achieving the same stylistic equivalence that the source language has even how it is expressed. There are many types of translations; however, in texts that might be a little more expressive, translators must be really careful when trying to achieve the same emotional tone because sometimes when trying to compensate, they go on another level and instead of translating, they are basically creating their own piece of art and thus leaving apart the author thoughts. So compensation will help to have the correct emotional tone, intensity, color etc... and will not let the translation to be neither less than the search of equivalences for idiomatic phrases which express the same idea in the target language

According Vinay and Darbelnet (as cited in Newmark, 1988), equivalence is useful to show different ways to say cliché and other aspects of language that will be mentioned later.

For the researcher's point of view, culture plays an important role because every culture is different and translators need to investigate about it because idiomatic phrases change depending on the country and due to the idiom is not used anymore, so the translator must be careful.

Another aspect the translator must be careful about is the context; Vázquez- Ayora (1977) mentions that the idiomatic phrase itself should not searched because what could happen is that in a specific context that phrase can mean something else, so what Vázquez- Ayora recommends is to look for the idiom depending on the context. For example, the word "excuse me" in a specific context can mean in Spanish "permiso"; nevertheless, in another context this same excuse me can mean "perdón" so that is why the context is really important. Equivalence does not only work for idioms but also for phrases, proverbs, and more (Vázquez- Ayora, 1977).

Something that must be clear is that idiomatic phrases will be totally different compared from the source language to the target language; however, even the structure or object inside the sentence are different, the meaning of the translation should be as close as the idiom mentioned.

2.2. 9 Adaptation

This procedure is a type of equivalence because the situation that could be happening within the text should be equal to the translation. Adaptation focuses on expressing elements of the source language into target one, but in a way that the audience can feel identified. Vázquez-Ayora (1977) states that the purpose of any translation is to

communicate and not only communication is important; one of the key elements is for the audience to understand the message.

Nida mentions that it is not possible to translate something that is not in the other culture as the purpose of the translator is to translate in a way that the text is communicative, natural, and accurate and that people do not realize that the text was translated. He states a really good example where a translator writes the expression “blanco como la nieve” (Vázquez-Ayora, 1977).

However, as he mentions, if in a certain culture something does not exist, as for example the snow; the translation will not be useful because it will not be communicative due to the reason that people of the town who read the target text will be confused due to the lack of knowledge about the snow (Vázquez-Ayora, 1977).

So Nida (as cited in Vázquez-Ayora, 1977) states that the translator should investigate the target culture and look for something that can be related to the white color, so instead of using the snow as an example it can be used “plumas de airón,” which happen to be very white. Using this adaptation, people will feel identified and will understand the text because it was adapted for them to understand.

One of the advantages of using adaptation is that this can help avoiding what is called cultural calque, which is a procedure that later on will be explained. If adaptation is not used in this type of cases and is used the incorrect procedure, this can cause confusion and the loss of some extra linguistic elements that are necessary (Vázquez-Ayora, 1977).

Adaptation is not only applied to objects but also to actions. Vinay and Darbelnet (as cited in Vázquez-Ayora, 1977) gave a very clear example where an English father from a long trip arrives home and give his daughter a kiss on her mouth. However, in Spanish the

correct adaption would be that the father came from his long trip and gave his daughter a huge hug (Vázquez-Ayora, 1977). This has to be adapted because in the English culture to receive loved member of the family would be with a kiss, but in the Spanish culture is different because the way to receive a loved member such as father or mother would be with a hug. In the point of view of the researcher that is the importance of using well the adaptation because if the phrase would be translated literal to the Spanish culture that would sound offensive, weird and maybe pervert.

2.2.10 Borrowing

In a borrowing words are taken from one language into another. These words or phrases are not translated; therefore, usually these words are written in italics. These types of words are really common in many texts. Some examples can be *café*, *banana*, *software*, *resumé*, *croissant*, and many more words. Borrowing is usually used when there is no equivalent in the target language.

2.2.11 Calque

It is also called loan translation is a literal translation from a borrowed word of another language. For this to be unsuccessful is really difficult because the translation is basically word for word. If the calque results unsuccessful, this would be due to the lack of knowledge of the translator (Bosco, n.d.). The calque can be used in common collocations, organizations, components compounds and sometime phrases (Universidad de Valencia, n.d.).

It must be clear that borrowing and calque are not the same. Sometimes translators confuse them but there is a small difference between them; the borrowed word is brought intact and the calque word is translated literary (Traductorpublico, n.d.). For instance, a clear example of calque is the word skyscraper which is being literally translated.

2.2.12 Sentence Inversion

According to Vazquez-Ayora (1977), this procedure consists on switching of place two elements in a sentence to provide naturalness in the target language. For example, “the main objective was previously explained, as you observed”. The translation would be “como pudo observar, el objetivo ha sido previamente explicado”.

2.2.13 Punctuation Changes

In any text, punctuation plays an important role because through it the person who reads can understand the text. If the punctuation is not good, it will be really hard that the person understands the text, book, newspaper etc...

It is the same in translation. The translator must be aware that punctuation plays a vital role when doing the translation. No matter how well the translation was done and all procedures that were used; if punctuation is not well used, the text will be poor and confusing.

When translating, punctuation changes are inevitable due to the fact that every language as mentioned before is different.

Here the researcher will explain some of the most common punctuation changes that can be found in translations. One change is the question marks. In English texts, they only contain one at the end of the question, but in Spanish the question marks are two, one at the beginning and one at the end. Another punctuation change is the exclamation points which are used in the same way as the question marks (Spanish about, 2016)

Periods are other type of punctuation which is used almost the same in English as in Spanish; nevertheless, there is a pretty small difference. When there are parenthesis, the period in English is used inside the parenthesis; however, in Spanish is used outside the parenthesis. The next type of punctuation are commas, these are used with small difference

between languages. This small difference is that when there are lists, often in English, the comma is used next the last item but not in Spanish (Spanish about, 2016).

Finally the angled quotation marks are a little different in both languages. This punctuation mark is related to periods because the small difference is that in English they are outside the period but in Spanish they are inside and the period is out.

2.3 Glossary

In this section, the investigator will explain the importance of glossaries. The relevance of using a glossary is that any translator no matter the level of expertise can create one depending on his/her need. The glossary is a guide to facilitate the work of the translator. The advantage of having glossaries is that it is the personal dictionary of the translator so he/she does not need to start losing time when looking up for a word.

Another advantage is that since the glossary is personal, the translator can modify it as many times he/she wants or need.

Also the glossary can be relevant for the translator because as it is his/her personal dictionary it can have multiple languages; the ones that the translator need.

The translator can add or remove categories of the glossary to make it better. One more advantage of having a glossary is that it can be saved in a carpet of a computer instead of looking at dictionaries online where maybe the place where the translator is there is not internet. There is no need to have money to create a glossary. The only element that the translator needs is the will to do it to facilitate his/her work, to be faster, and accurate.

The relevance for the translation process are the elements before mentioned. The process will be easier with a glossary instead of looking for every word that appears. Also

through the process, the translator will have more vocabulary and more experience on how to work on certain topics.

Many translators ask the correct way to create a glossary; nevertheless, in the point of view of the investigator there is not correct way to create a glossary because as every translator is different, glossaries should be different too.

The investigator believes that in translation there are many ways to translate, but that does not mean that if translator made it different it will be wrong.

To create a glossary there are recommendations to do it, so in this section, the investigator will give some steps to do a well glossary, so translators can enjoy all advantages aforementioned. According to Gapper one of the first steps to create a glossary is to add different kinds of definitions. These definitions can be own, encyclopedically, terminological or complete from a dictionary.

These definitions will help the translator to be surer about what he/she is translating. The translator can add colors to the words or definitions to have a better guide. Another step would be keep all words or phrases the translation find in alphabetic order, so he/she can be faster when looking up for a word. The investigator recommends using the alphabetization as in the dictionaries.

It is also recommended to separate the terms found in different field categories, so the translator does not get confused because sometimes there are terms that can be the same but the context is different. Also the glossary should contain a grammar categorization, in this way the translator can see if the word is a noun, verb, adjective or an adverb.

Also if it is possible, add synonyms or equivalents to have a better idea of the word that is being translated. In this way the translator will have more different options to use

when translating. Finally it should of course contain the definite translation that the translator is going to use in the text.

Those are some steps or recommendations to make a glossary; however, if the translator wants to do it different that is his or her option.

Chapter III

Methodological Framework

The third chapter of this investigation is about explaining the different methods, which can be applied on an investigation. The researcher is going to show the different techniques that can be used to analyze a translation, for example, the color-coding, text analysis chart, and the glossary. Furthermore, the background of the institutions that provided the materials to be translated is also going to be explained, and thus to wrap up with the specific reason why the translations that are going to be analyzed in this investigation are relevant.

3.1 Research Method and Scope

Most investigations are based on one of the three main investigations methods: quantitative, qualitative, and mixed. Although technology tends to make investigations easier, the three methods just mentioned remain. The method chosen for this investigation is the qualitative one; however, the researcher considers relevant to explain all the three methods.

3.1.1 Quantitative Method

This specific method had its origins around 1250 A.D. when investigators needed to quantify data. Its basic structure or design is based on numeric and statistical facts; moreover, the data analyzed is reviewed in an objectively way due to the fact that what is being analyzed are numbers and statistics. One remarkable characteristic of this method is creating meaning objectively through the collected data. The quantitative method bases its

structure with a problem statement, and it involves a hypothesis, literature review, and data analysis. The findings can be predictive, explanatory, and confirming (Williams, 2007).

3.1.2 Qualitative Method

This method is entirely different from the previous one. Its basic characteristic is the focus on discovery. Basically, it is a model that occurs in a natural setting where actual experiences are involved. Another important identifier of the qualitative research is that it involves the social phenomenon of the participant's point of view. Its basic design involves describing, explaining, and interpreting the collected data. Two important researchers, Leedy and Ormrod (2001), stated that the qualitative method is less structured due to the fact that it formulates and builds new theories when the data is collected; it is not as rigid as the quantitative method. This approach is used to explain social behaviors in new and emerging theories (Williams, 2007).

3.1.3 Mixed Method

This method consists on collecting and combining the data of the quantitative and qualitative method to have a better understanding and corroboration of what is being searched. As it is a combination of methods, the investigator uses different techniques such as point of views, data collection analysis, interviews etc. (Johnson, 2007).

Based on the information mentioned before; the best method to use in this investigation is the qualitative approach because the investigator has to discovery different elements of the translation, such as identifying which are most used procedures in a technical translation, as for example in the document Costa Rica Distinguished Fire Corps; or what the intention of the author is in the documents "12 Steps to change, The 10 Signs of

Financial Problems, I am Alone and that is Fine, and The Practical Side of Singleness” to give the correct tone of voice to the translations.

It is also important to mention that the qualitative approach will be useful in this investigation because the phenomenon of the point of view of the participants is taken into consideration; for instance, in the technical translation as experts or students are going to read the translation, the vocabulary will be formal and technical for them to understand the text. The point of view of the participants will be applied by knowing in general the level of education the participants have.

In regards to the other documents of the institution Centro de Excelencia Church, the investigator learned that in a church there are different types of people with different levels of education. Therefore, the translation must have a simple vocabulary, so they can understand and feel the real meaning of what the preacher is trying to convey.

Finally this approach fits perfectly to this investigation because as mentioned before the design of the qualitative approach is to describe, explain, and interpret the collected data. In these translations, the procedures are going to be described and explained by the investigator to interpret what are the most common ones.

3.2 Selection and Description of Population and Sample

The subject of analysis in this paper consists of two texts. This section aims to explain the translated documents. The first document from English to Spanish was provided by the Costa Rica Distinguished Fire Corps. This text consists on showing how different elements in the environment can produce a fire ignition. It also shows that electricity is not the main cause of ignitions and that there are different elements that can produce one

besides electricity. This translation is intended to those people who are educated on the topic or for those who are studying to become experts on the topic. In addition, this translation educates on the most current mistakes that people do to produce an ignition in an electrical appliance showing statistics of the most recent years.

The other documents translated from Spanish into English were for the institution Centro de Excelencia Church. There are four documents that were translated. The first document “12 Steps to change” tells how God can change a life forever with the renovation of the mind and explains how every process has to follow a specific plan to complete this change. The second document “10 Signs of Financial Problems,” explains the most common signs of financial difficulties and simple pieces of advices or recommendations that can help a person to eliminate them using as a reference the Holy Bible.

The third document is “I am Single and that is Fine.” This document tries to make the readership realize that no matter how alone somebody feels, God is going to be there every single moment. It also teaches not to take quick decisions without thinking about the purpose of life. Last but not least, the document “ Practical Side of Singleness,” is based on how the purpose of life comes at the right moment, and that a person who is single must take advantage of it being single to look for the purpose of God because in that moment they are going to meet the correct person at the right time.

In broad terms, the main idea of these four texts is to demonstrate how God is in every single moment of life, no matter the circumstance or situation that a person is living. These documents also show how the word of God is applied in every moment of life. The mission of translating these documents into English is to take the Gospel to other people

who might not master the Spanish language in Costa Rica; as well as to influence their lives in a supernatural way. There are many churchgoers from different parts of the world that need to be impacted with the word of God, and these translations will help them understand God's purpose in their lives. Furthermore, the preacher at Centro de Excelencia Church travels a lot to United States, and these translations will help him to influence the people outside the country.

3.2.1 Description of the Institution

The first institution to be described is the Costa Rica Distinguished Fire Corps. This institution has its origins on January 26th, 1864 after a huge fire in the household of Francisco Maria Iglesias. After that fire, the Costa Rican people decided to create a well organized firefighter group (Bomberos de Costa Rica, 2016).

The City Hall of San Jose presented to the Executive Authority the first official Regulation of firefighters of Costa Rica, which was approved on July 27th, 1865. This event established the origin of these kinds of activities. Due to very difficult economic problems of the Municipal Corporation in 1914, the firefighters became dependent of the Government (Bomberos de Costa Rica, 2016).

Nowadays, the Costa Rica Distinguished Fire Corps have academies and courses to train people who are serving this institution. The mission of the institution is to operate with training processes for the development of new knowledge and skills; and their vision is to bring training for the attention and prevention of fires (Bomberos de Costa Rica, 2016).

The second institution is The Centro de Excelencia Church. This institution was founded on December 31st, 2001 by the preachers Luis and Ana Apuy. One of greatest characteristics of the church is to offer the word of God, which not only cheers up and confronts, but that also has an amazing revelation (Centro de Excelencia, 2016).

The values of the church are based on the belief of God the Father, Jesus Christ, and the Holy Spirit. The vision of the preachers Luis and Ana focuses on saving lives to Christ once at a time, and the job of the ministries is to reach that purpose. In 2014, the preachers decided to open small heads away from Guadalupe, where the main church is. The reason of this was to reach people that are far way from the main church. Now, there is small head in Guachipelin of Escazu (Centro de Excelencia, 2016).

The documentation translated for both institutions will have a positive impact in the society. For instance, the document translated for Costa Rica Distinguished Fire Corps will help students and professionals to have more knowledge about the investigation of fires, so they can develop a deep analysis before stating the final decision. On the other hand, the documents translated for Centro de Excelencia Church will affect the society in a positive and spiritual way because the Word of God is being taken to missionaries or preachers that come from other parts of the world or even people who do not dominate the Spanish language.

3.2.2 Description of the Sample

To analyze both documentations and reach the goal of the objectives mentioned before, specific samples will be taken out of the documents. This sample consists on 15 paragraphs, which should contain around 100 to 125 words each. The analysis is going to

be carried out by the technique of color coding to differentiate the different type of procedures that a translation might have.

3.3 Implemented Strategies

When doing a translation, there are many steps that need to be followed for the target version to be successful. The first aspect that translators must do is a general reading because if not, the translator is not going to have an idea of what he/she is translating, and this might provoke misunderstandings and the use of wrong vocabulary.

After a general reading, the close reading will be more detailed, and the translator will be able to identify things more specifically such as specific vocabulary, tone of voice, complexity of the text etc. As the point of view of the researcher, the close reading is a little bit more important than the general reading because aspects that were not seen in the general reading will be shown in the close reading. Nevertheless, both readings have to go hand in hand with the translations because if not, the reader might feel that something is missing or incomplete.

In the process of the translation, the translator must also have enough tools to convey meaning and give the exact meaning of the words and phrases translated. In this type of cases he/she must have dictionaries, glossaries, internet or even documents related to the topics translated because from there, the translator can have ideas or see how a specific word or phrase is used. Finally, the revision is a fundamental process that will help translations to be excellent and comprehensible because without it, the translator is not going to realize if the elements of cohesion, coherence and other elements that are

important were well applied. Correction is an element that never has to be forgotten no matter the type of difficulty is.

Once translations are reviewed, the analysis of the 15 paragraphs will begin by identifying which procedures are the most and less used and see what trends can be found in a technical and simple translation by applying the method of color coding.

| Procedure | Example | Explanation |
|---------------------|---------------------|--|
| Transposition | Transposition | Highlighted in red |
| Modulation | Modulation | Highlighted in yellow |
| Omission | <u>Omission</u> | Underlined in the source text and in Black |
| Amplification | Amplification | Highlighted in turquoise |
| Explication | Explication | Highlighted in green |
| Literal Translation | Literal Translation | Highlighted in pink |

Table 1. Color coding of translation procedures.

3.4 Data Collection Instruments

The data collection instrument is used to analyze and put together all elements that were found in the translations; moreover, this instrument is very useful to reach the objectives and the corresponding conclusions. The two instruments used by the researcher are a glossary, analysis chart, and the color coding table.

3.4.1 Text Analysis Chart

This chart is a useful tool to recognize the corresponding aspects that a translation must have and see the general elements that can be seen when doing a general and close reading. This next table represents the text analysis chart that the researcher will use to carry out this part.

| | | | | | |
|--------------------------------------|---|-----------------------|---|--------------------------------------|---|
| Text analysis | Costa Rica Distinguished Fire Corps | 12 Steps to change | The 10 Signs of Financial Problems | I am Alone and that is Fine | The Practical Side of Singleness |
| Text Style | | | | | |
| Stylistic Scale of Formality | | | | | |
| Stylistic Scale of Generality | | | | | |
| Stylistic Scale of Emotional tone | | | | | |

| | | | | | |
|---------------------|--|--|--|--|--|
| Text Function | | | | | |
| Type of Translation | | | | | |

Table 2. Analysis Chart

3.4.2 Glossary

The glossary is one of the tools that translators must use in their everyday life due to the fact that it is the vocabulary the translator has been collecting through all experiences. The principal role of glossaries is to give specific definitions of unknown terms or phrases. One important aspect of the usefulness of glossaries is that there is no need of internet to look for a specific word or phrase.

In this research there is going to be five glossaries. One from English to Spanish and the other five will be from Spanish into English. These glossaries contain terms, phrases, categories, definitions, synonyms, and translations.

| Term/phrase | Category(N,V,Adj, Adv) | Definition | Synonyms/Equivalent | Translation |
|--------------------|-------------------------------|-------------------|----------------------------|--------------------|
| | | | | |

| | | | | |
|--|--|--|--|--|
| | | | | |
|--|--|--|--|--|

Table 3. Format of the glossary

Chapter IV

Translations

This chapter contains the translations of the documents that are going to be analyzed.

4.1 Translation from English into Spanish

Descomposición del aislante (degradación) de rastro del carbono

La mayoría de materiales aislantes de electricidad son compuestos orgánicos que contienen carbono, con la excepción del vidrio, cerámica, mica y el aislante de amianto.

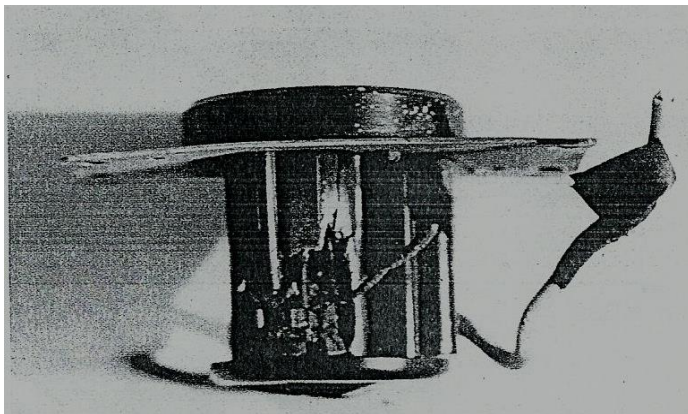


Figura 10-25ª La vibración de una secadora

que estaba conectada a un toma corriente de 240-V causó que se aflojara una conexión. El cable 10 AWG (calibre de alambre estadounidense) involucrado fue pulverizado a un punto muy fino. La cubierta de fenólica se descompuso a distancia hasta que se encendió. Las llamas consumieron el cable aislante y el enchufe adyacente. El fuego fue confinado por un contenedor de metal. Courtesy of John D. DeHann.



Figura 10-25B: *La ignición del toma corriente de plástico debido a una mala conexión. (Ver la figura 10-20a)*

Courtesy of John D. DeHann.

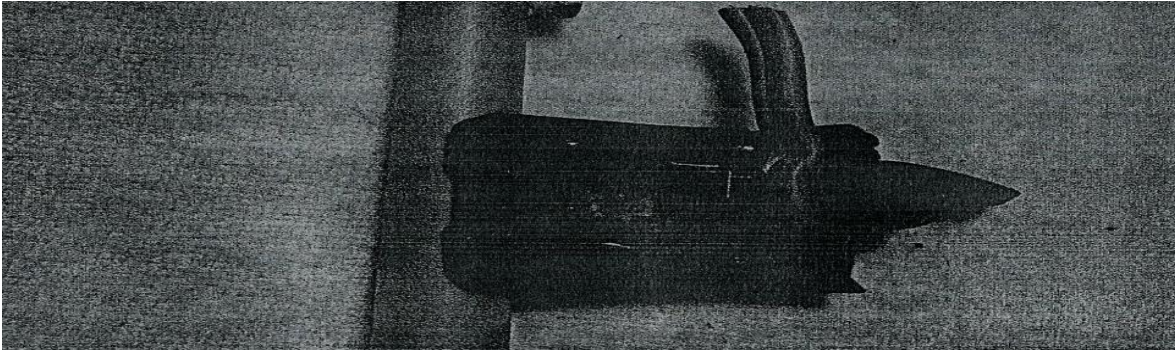


Figura 10-26: *Los enchufes del cable proveen una zona de contacto mínima. Courtesy of John D. DeHann.*



Figura 10-27A: *Los cables doblados en un tubo causaron un corto circuito. Courtesy of John D. DeHann.*

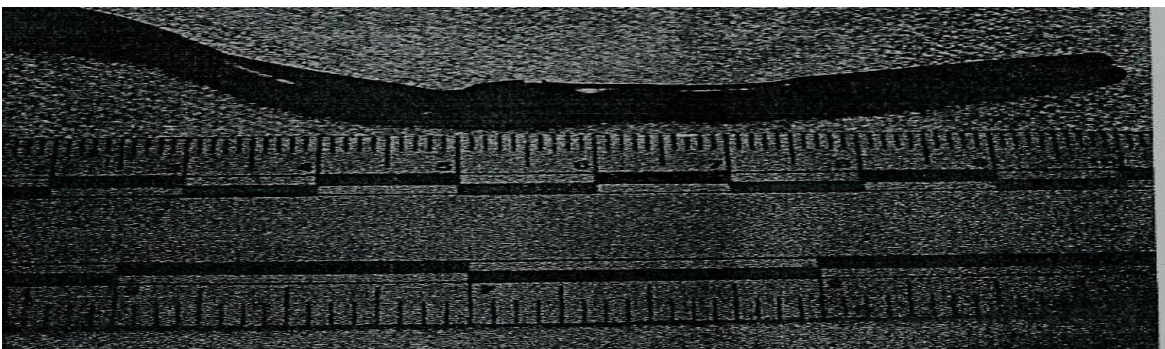


Figura 10-27B: *Los cables doblados causaron una serie de fallas de conexión de arco. Courtesy of John D. DeHann.*

Por lo tanto, la degradación de tales aislantes por el calor produce un residuo de carbono, que es un semiconductor eléctrico. Se le llama carbonización cuando la pirólisis ocurre en una zona extensa.

La falla puede ser más sutil porque actúa donde quiera que el aislante haya perdido completamente o en parte su capacidad de aislamiento, de este modo, permite que la corriente siga un camino no deseado. Se debe activar un circuito para que de la falla del aislante haya un sobrecalentamiento; sin embargo, el equipo no necesita estar operando. El circuito puede ofrecer una ruta no deseada para que la corriente fluya de caliente (energizada), a conexión a tierra o vía neutral a través de contaminantes conductivos o productos pirolíticos, por tres rutas: (1) mediante materiales aislantes, (2) a través de la superficie de los materiales aislantes o (3) a través del aire.

Con frecuencia se le llama *arco de rastreo, arco a través de carbono o rastro de carbono*, cuando una corriente fluye entre conductores en una zona reducida. El resultado de este rastreo de carbono es que un supuesto aislante se convierte en un semiconductor. Esta transformación a menudo ocurre durante un tiempo prolongado y a una velocidad tan lenta que no está lista para ser perceptible hasta que el trayecto conductivo se forma; este puede conducir tanta corriente que podría producir exceso de calor.

El periodo puede ser tan largo como unos meses o años previos a la ignición de un incendio. Por ejemplo, si un aislante absorbe humedad, una pequeña corriente puede fluir produciendo algo de calor. Este calor puede degradar lentamente el aislante orgánico en los

alrededores y convertir una parte en carbono. Una vez que se forma suficiente carbono entre los conductores, más corriente puede fluir a lo largo del trayecto del carbono, lo que provee un calentamiento local y una mayor degradación.

Tome en cuenta que como la corriente está fluyendo a lo largo de un trayecto de un área limitada, incluso el paso de 1 A o algo semejante podría crear una fuente de ignición muy competente sin que se active la protección del interruptor. Conforme el proceso continúa, la corriente aumenta progresivamente a medida de que se forma más y más carbono.

Finalmente, salvo a que funcione el interruptor o fusible, un arco puede ser afectado y encender el aislante carbonizado o los productos volátiles de pirólisis, lo que resultaría posiblemente en un incendio.

Fuga de corriente

El desarrollo de un camino alternativo es a veces llamado *corriente de fuga*. Si la superficie de un aislante está contaminada, algo de la corriente se filtra a través del camino del contaminante y comienza el proceso descrito.

La figura 10-28 muestra la corriente de fuga calentando la superficie de un enchufe de plástico contaminado. Tome en cuenta que el enchufe está energizado, pero no está conectado a un aparato. El flujo de consumo de esta corriente era de 0.25 A o un poco menos; pero a los 120 V, esto causó que produjera 30 W de calor en una zona muy pequeña y temperaturas tan altas que el brillo de la combustión era visible. Esta situación es más frecuente en electrodomésticos de bajo costo, en los que se utilizan aislantes de baja calidad.

Este hecho se ha presentado en interruptores de aparatos eléctricos desde la ignición del aislante que protege los contactos y se ha visto en muchos aparatos como televisores, secadoras de ropa, coffemakers, detectores de humo, toma corrientes hechos a la medida y demás. Los materiales usados para el aislamiento, incluso en aparatos de alta

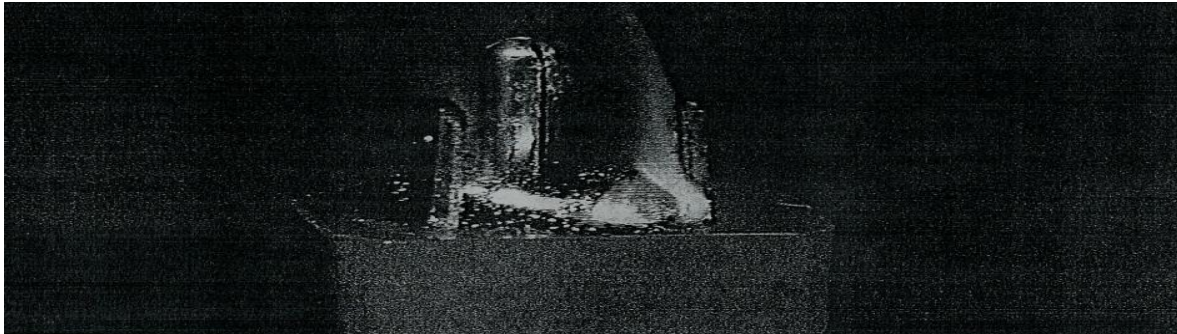


Figura 10-28: El laboratorio recreó una fuga de corriente a lo largo del toma corriente de plástico degradado.

calidad son seleccionados con base en las condiciones térmicas previstas bajo su uso habitual. De lo contrario, si un cable de alimentación se utiliza en un entorno excesivamente caliente o incluso debajo de alfombras o mantas, el calor generado no podría escapar. Después el calor se podría acumular más allá de los límites del diseño del aislante y este empezaría a degradarse. Se debe recordar que sobrecalentar los conductores primero causa la degradación del aislante rodeándolos, seguido por la degradación de enchufes, tomas y otros equipos. Solo entonces el calor de un cable sobrecalentado afectará a otros combustibles.

Una vez que la llama haya iniciado, otros combustibles como celulósicos o termoplásticos pueden ser rápidamente involucrados. La figura 10-29 muestra la placa del toma corriente de plástico y el enchufe envuelto en llamas como consecuencia de un fallo simulado de degradación del toma corriente.

Este mecanismo de degradación ha sido relacionado como causa de incendios en una variedad de montajes y circunstancias como con los aislantes de los conectores de lámparas fluorescentes, cables eléctricos expuestos al calor externo, enchufes y toma corrientes. Así como la exposición al calor provoca cambios químicos y físicos en la madera, cambios similares pueden ocurrir cuando los aislantes de plástico son expuestos al calor.

Este calor puede ser debido a conexiones de alta resistencia, flujos de alta corriente sin interrupción o calor externo. Las conexiones flojas en los circuitos del hogar (15A) son reconocidas por producir altas temperaturas que están entre los 150 °C and 200 °C (300° y 400 °F). Tales elevadas temperaturas [incluso en un periodo cíclico] causarían que el PVC [policloruro de vinilo] y los aislantes de urea-formaldehído se degraden y desarrollen la capacidad de rastreo. Una vez que la corriente comienza a fluir a través de material degradado, el calentamiento localizado y la ignición continuarán.

El agua y el rastro del carbono

El abuso de remojo o el permitir la acumulación de polvo conductivo en un aparato, puede desencadenar un rastro de carbono.

Cuanto mayor sea el voltaje, mayor es la probabilidad de que el rastro pueda suceder. Esto es menos probable en los circuitos de menor voltaje, (<24 V) pero se vuelve más probable en voltajes mayores. La figura 10-30a muestra el rastro de un arco entre dos terminales energizadas con un transformador de neón 12-kV activado por rociar agua destilada en la madera entre las terminales. El agua filtró suficientes materiales de madera para ayudar a la filtración de la corriente. Tanto la formación del arco como la madera

descompuesta, dieron como resultado la ignición de la madera. La figura 10-30b muestra el efecto del agua de lluvia que eventualmente causó un cortocircuito en un conector de señal de neón que estuvo cerca de incendiar superficies de madera cercanas.

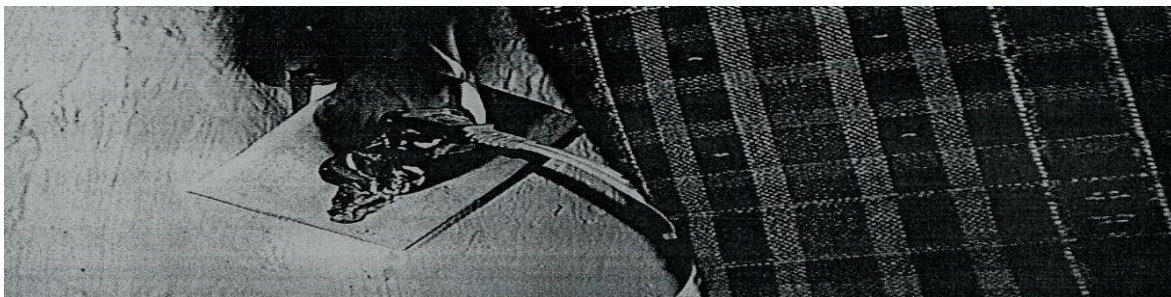


Figura 10-29: *Se hizo un incendio de simulacro en un residencial después de que la degradación de un aislante en un toma corriente produjera llamas pequeñas y encendiera materiales inflamables como cortinas y tapicería. Courtesy of Chris W. Korinek, P.E., Synergy Technologies LLC, Cedarburg, WI.*

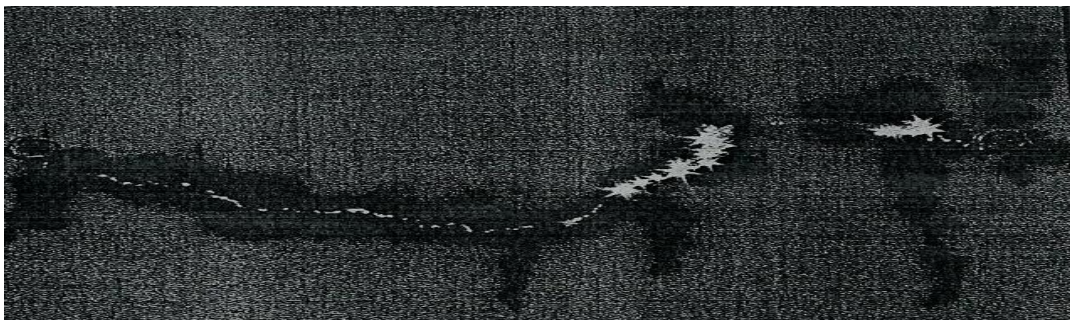


Figura 10-30A: *El laboratorio recreó un arco de rastreo que atravesó la madera después de que se colocara agua en medio de dos terminales con una diferencia potencial de 12kv. Un típico transformador de señal de neón. Courtesy of Chris W. Korinek, P.E., Synergy Technologies LLC, Cedarburg, WI.*

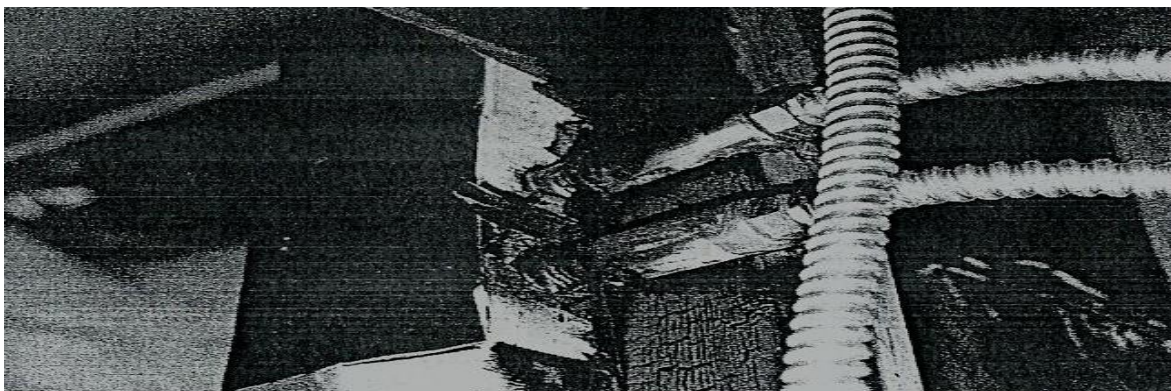


Figura 10-30B: *El conector de neón (PK) ha sido expuesto a la lluvia y ha hecho corto circuito lo que ha causado el calentamiento de materiales inflamables y un gran daño en un rótulo exterior. Courtesy of Joe Bloom, Blomm Fire Investigation, Grants Pass, OR, and Chris JBloom, CJB Fire Consultant, White City, OR.*

Mientras que el agua pura es un aislante; el agua de tubo contiene suficiente sales disueltas para ser levemente conductora, cuanto más sal contenga, mejor conductividad va a tener. Las pequeñas cantidades de agua impura pueden jugar un papel importante en el desencadenamiento del rastro de arco en los aislantes; pero estas también pueden causar corrosión que puede resultar en alta resistencia; el calor produce conexiones. Estas conexiones crean calor localizado y la pirolisis de sus aislantes, además genera flujos de corriente adicionales a medida que el carbono se desarrolla.

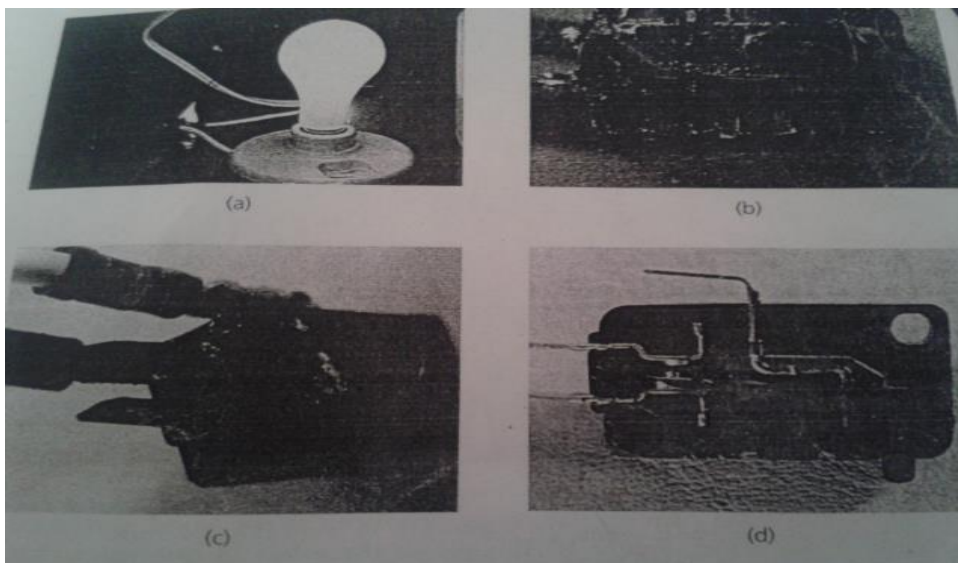


Figura 10-31 A-D: El laboratorio recreó la ignición de una carcasa de un interruptor después de que fuera expuesta a agua con un poco de impureza. El voltaje era de 120 V y la corriente no excedía 1,3 A (b y c). El plástico que está entre las terminales del micro interruptor ha sido degradado, lo que permite a la corriente fluir entre las terminales del interruptor “abierto”. Courtesy of Chris W. Korinek, P.E., Synergy Technologies LLC, Cedarburg, WI.

Cuando el agua se filtra en un equipo eléctrico, puede proporcionar caminos adicionales para que la corriente ingrese a partes del equipo que no se espera conduzcan corrientes. Además de proporcionar un potencial peligro de descarga eléctrica, la presencia de agua no pura se ha visto como una causa de incendios por permitir que la corriente fluya a lo largo de estos caminos no planificados. En un caso, una tormenta quebró los conectores de servicios públicos y dobló el conducto de la entrada. Cuando se hicieron las reparaciones, la entrada del conducto no fue reparada y se soltó con fuerza en el techo, permitiendo un camino para que la lluvia fluyera directamente hacia la pared y con el tiempo hacia el sistema de distribución eléctrica. La contaminación del agua dio como resultado, en última instancia, la ignición y destrucción del fuego.

Los códigos contra incendios mencionan tipos específicos de equipamiento eléctrico para lugares húmedos o mojados. Cuando un equipo regular está expuesto a estas condiciones, un desastre puede ocurrir. En las pruebas mostradas en las figuras 10-31 a-d, se aplicó agua con un poco de impureza a un interruptor eléctrico, se produjeron chispas, humo y llamas, ya que el plástico del interruptor se sobrecalentó. Tenga en cuenta que la luz en serie estaba con una falla y limitaba el flujo de corriente en el circuito. El OCPD [dispositivo de protección contra sobrecorriente] no estaba activado porque la corriente no superó el 1.3 A. Los tomacorrientes de la pared que están debajo de los dispensadores de toallas en los baños públicos son a menudo afectados por la corrosión del agua.

El calor y el rastreo de Carbono

Calentar un cable que actúa como aislante (o cables aislados en el interior de un conducto o aparato) provocará que el aislante se degrade, a veces sobre un área sustancial.

Los conductores energizados internos pueden proporcionar una corriente que fluye a través de un aislante carbonizado (formación de arcos por carbono) ya sea a través del suelo, por un conductor neutro o por un conducto a tierra. Con un conducto se puede “forzar” un agujero a través del metal en la proximidad del arco. (Como se ve en la figura 10-32). Tenga en cuenta que tal agujero es casi siempre el resultado de un incendio preexistente y no una causa inicial. El calor localizado puede descomponer y encender el aislante. Las partículas de metal fundido también pueden salir expulsadas y caer en otros combustibles.

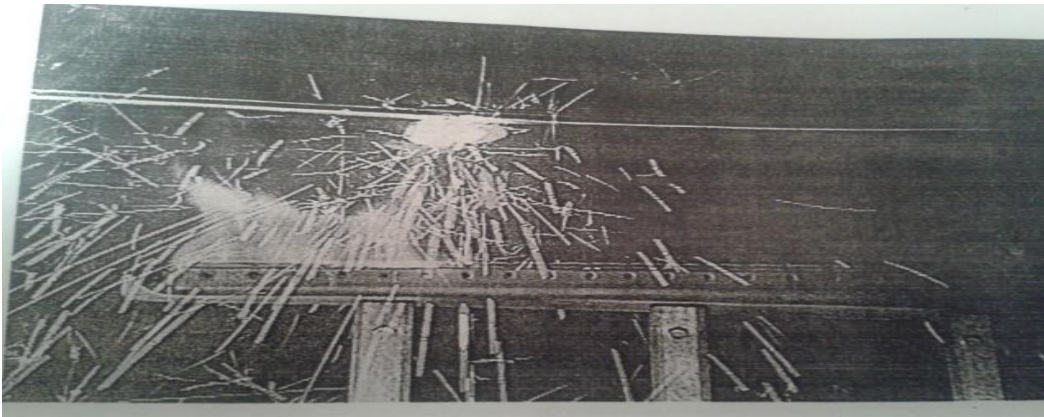


Figura 10-32: Laboratorio recreó un arco producido por carbono (causado por el calor de un incendio externo) lo que produjo que se fundieran hoyos en el conducto de metal que encierra el cableado en un circuito de alta corriente. Courtesy of Chris W. Korinek, P.E., Synergy Technologies LLC, Cedarburg, WI.

Los circuitos de corriente muy elevada, monofásicos o trifásicos, van a permitir el suficiente flujo de corriente entre un cable aislado dañado y un conducto con conexión a tierra (EMT) o un cable reforzado y flexible (BX), para fundir un agujero a través del conducto y causar un incendio, como se muestra en la figura 10-33.

Un mecanismo muy diferente se ilustra en la figura 10-34. Ahí la cubierta del cable de metal flexible se energizó debido a una apertura neutral y se convirtió en un elemento térmico que encendió las vigas de madera adyacentes.

Arcos y Chispas

Como vimos en el capítulo 6, un arco puede definirse como un flujo de corriente que circula a través del gas (normalmente aire). Puede variar de una pequeña descarga (una chispa) y acumularse al caminar sobre una alfombra seca y pasar a ser una gran descarga eléctrica. Si un arco se mantiene, los gases atmosféricos en los cuales la corriente está pasando, pueden ser complementados por vapores ionizados (plasma) de los conductores implicados (o en el caso de la soldadura, por los vapores de un flujo o gas especializado). Para que un arco se establezca en el aire entre dos conductores requiere ya sea un alto voltaje o un espacio muy pequeño entre los conductores, ya que el aire es buen aislante. Una vez que un arco se establezca, este puede mantenerse, en tanto que los conductores se separen por la vía del camino conductivo, brindado por el metal vaporizado y las moléculas de aire ionizadas.



Figura 10-33: Conducto de mástil de servicio implicado en un incendio lo que muestra un arco y la penetración desde dentro. Aquí la corriente estaría limitada por la línea del transformador (de 2,000 – 3000 A). Courtesy of E. R. Baker, Fire Investigator, Fresno, CA.

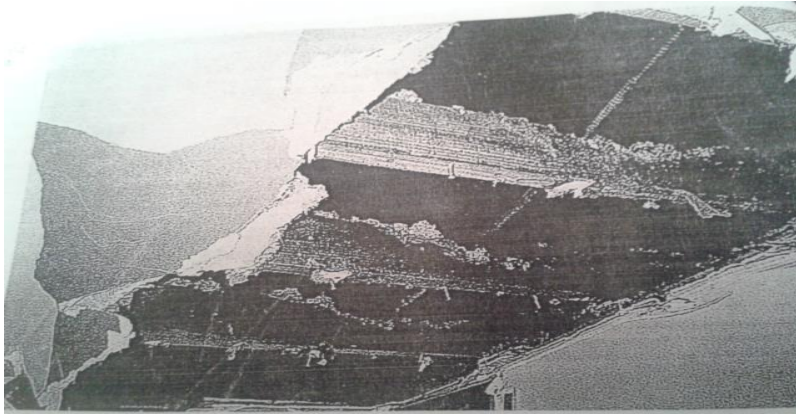


Figura 10-34: Un cable reforzado se energizó cuando una apertura neutral ocurrió en el medidor. Esta actuó como un elemento de calor lo que produjo la ignición de las vigas del techo. Courtesy of Detective Mike Dalton, Knox County Sheriff's Office, Knoxville, TN.

Esto es especialmente verdadero con las corrientes DC [corriente directa], cuyo voltaje no pasa a través de cero periódicamente como lo hace la AC [corriente alterna]. Como se describió previamente, un arco produce temperaturas muy elevadas de miles de grados, pero están localizadas, así que el combustible tiene que estar casi en contacto con el arco para que se encienda. Los gases y vapores, incluyendo los aislantes de pirolisis activos, están más preparados para encenderse en llamas que los combustibles sólidos. A menos de que un combustible sólido esté muy finamente dividido o sea delgado (como el papel), puede resistir la ignición, pero solo los arcos más enérgicos y prolongados. El papel fino, aserrín, la pelusa y los gases y vapores inflamables son capaces de encenderse por arcos de 120/240- V en los circuitos AC.

Cuando una corriente excesiva pasa a lo largo de un conductor metálico, su temperatura aumenta hasta el punto en el que el metal se funde. En tanto que se produce la primera fundición, el alambre se rompe y la separación del arco en ese punto se produce (podría mantenerse con voltajes lo suficientemente altos).

Este arco genera temperaturas muy altas a nivel local y el metal fundido se esparce sobre superficies cercanas más frías donde vuelve a condensarse en forma de gotas. Si bien estas chispas (usualmente partículas incandescentes) son muy calientes, no tienen suficiente capacidad térmica para encender combustibles sólidos masivos que estén cerca, salvo en las circunstancias más inusuales. Pero al recordar la información sobre la pirolisis de los capítulos 3 y 5 nos damos cuenta de que el calor continuo descompone la mayoría de plásticos o aislantes celulósicos en gases y vapores combustibles, así como en carbono conductor. Los gases y vapores son a menudo los que se encienden de primero por el propio arco.

La ruptura del voltaje del aire seco es de unos 30.000 V / cm (75 KV / cm), pero el voltaje mínimo, en espacio mínimo ($\sim 0,01 \text{ mm}$) continua siendo 340 V (CC o CA RMS - $240 \text{ V CA pico} = 340 \text{ V RMS}$)²⁰. Por lo tanto, si dos conductores descubiertos se mantienen separados en el aire, incluso por un pequeño espacio, un arco no puede iniciar. Si dos conductores hacen contacto y luego son separados, los gases ionizados y residuos metálicos pueden mantener el arco a cierta distancia hasta que el voltaje diferencial llegue a cero. En un circuito de $120\text{-V } 60\text{-CA Hz}$, la formación de arcos dura usualmente de 0,5 a 4 ciclos ($0,008\text{-}0,05 \text{ s}$).

Un arco AC tiende a auto-extinguirse en tanto su ciclo pasa a través de cero voltios en la onda sinusoidal de voltaje de AC. Un arco DC puede mantenerse mientras haya energía. La duración del arco es crítica para su capacidad de encender combustibles cercanos, mientras que la temperatura de los gases / plasma en el arco es una función de la corriente y es a miles de grados Celsius. La duración del arco promedio en un circuito de sobre corriente-protegida normalmente será tan breve que la ignición de los combustibles

sólidos es casi imposible, excepto cuando el combustible está finamente dividido (por ejemplo por desperdicios de algodón o aserrín fino) y en contacto directo con el arco o cuando la protección de la sobre corriente falla para interrumpir el circuito.

Los gases y vapores inflamables por supuesto pueden encenderse por todos los arcos, pero especialmente los más pequeños, debido a sus energías bajas de ignición y el contacto directo con los gases sobrecalentados del arco.

Cableado de aluminio

El aluminio puede ser considerado a veces como un sustituto del cobre debido a que es más ligero y de menor costo. Para todo el cableado interno, el aluminio se utilizó por un período de años en los hogares y en las casas móviles; sin embargo, hoy se utiliza sobre todo para las líneas de distribución de alto voltaje y en sub paneles. El cable de aluminio se emplea habitualmente para conexiones de servicio (del polo a la acometida). El conductor de aluminio debe ser más grande debido a que el aluminio es un conductor de inferior conducción que el cobre para llevar la misma corriente de forma segura. Sin embargo, debido a que el aluminio es más ligero, se requiere menos peso en el conductor y dado a que el aluminio cuesta mucho menos por libra que el cobre, es más barato utilizarlo.

El principal problema con el aluminio es el de hacer las conexiones mecánicas. La mayoría de las dificultades con el cableado de aluminio no se encuentran en la extensión del alambre, pero si en los extremos donde se realizan las conexiones. Las fallas son el resultado de substituir directamente el alambre de aluminio por el de cobre, por ejemplo, el uso de conectores, toma corrientes e interruptores que estaban diseñados para cables de cobre. La calidad del trabajo del instalador es fundamental para evitar problemas que se

derivan de peculiares propiedades físicas y químicas del aluminio. Incluso el mejor electricista no puede instalar un cableado de pequeño diámetro de aluminio para que sea fuerte y mantenga una buena conexión de forma indefinida. Los siguientes puntos son para que los tenga en cuenta.

En primer lugar, la conductividad eléctrica del aluminio es más mala que la del cobre. Como principio general, el cable de aluminio debe ser de dos tamaños más grandes (dos números AWG más pequeños) que su equivalente al cobre. Las tablas de cables se deben consultar para obtener los requisitos exactos del tamaño. Este requisito puede ser pasado por alto por algunos instaladores.

En segundo lugar, el aluminio es químicamente muy activo. Las superficies expuestas siempre tienen un recubrimiento de óxido. Esta capa de óxido actúa como un aislante y es un problema importante para que se hagan buenas conexiones eléctricas. Los conservantes químicos como pastas antióxidas por lo general se aplican al realizar conexiones para minimizar esta formación de capa de óxido.

En tercer lugar, el coeficiente de expansión térmica del aluminio es diferente al del cobre, y para cualquier combinación de estos dos metales; las asignaciones se deben hacer para reconocer esta diferencia. Las conexiones que están apretadas a cierta temperatura pueden aflojarse en otro punto, además el continuo hecho de estar apretando y aflojando debido al cambio de temperatura, puede dar como resultado que se afloje la conexión permanentemente.

Por último, otro problema, principalmente con los primeros productos, era el flujo de frío. El aluminio se deforma como masilla cuando se somete a presión y fluye lejos de los puntos de presión y da como resultado una mala conexión.

Los problemas básicos con cableado del aluminio se han corregido en gran medida por los nuevos conectores de aleación de aluminio. Los conectores, toma corrientes e interruptores tienen similitudes con sus antiguas contrapartes, pero la selección de los materiales y su diseño en su mayor parte se ha corregido. Los dispositivos que son aceptables para el aluminio son marcados como (AL / CU). Las fallas del cableado de aluminio pueden ocurrir incluso con dispositivos AL / CU.

El aluminio que tiene una temperatura de fundición más baja (660 °C, 1220 °C) que la del cobre (1083 °C, 1, 1981 °F) que por lo general se derretiría y por lo tanto no podría proporcionar información útil después de un incendio substancial. A medida de que se derrite pueden formar aleaciones eutécticas con los conductores de cobre y puede causar que se desvanezcan a veces, dando la apariencia de una gran falla del conductor de cobre. La presencia de "bronce" dorado "mancha" en lo que queda del cobre es un indicio de que pudo haber habido una aleación de aluminio.

Transformadores eléctricos y motores

Los transformadores eléctricos y motores son similares en que contienen alambres de cobre que se enrollan sobre un núcleo de hierro, esto crea campos magnéticos. Ambos pueden sobrecalentarse por flujo de corriente excesiva; este calor excesivo, también puede causar la destrucción de aislante que en ausencia de la protección de sobrecarga apropiada es capaz de causar una ignición.

Transformadores Eléctricos

Los transformadores contienen varias bobinas y algunas ellas contienen cables conectados al punto medio de estas (llamado vibraciones de bobinas medias). Se utilizan para subir o

bajar el voltaje (y corriente) en un circuito de AC. Los transformadores grandes con frecuencia están llenos de aceite para aislarlos y proporcionar un baño frío por el calor que normalmente se produce. Los grandes transformadores de energía de este tipo tienen un riesgo potencial de incendio por los altos voltajes y por la presencia de ciertos tipos de aceites inflamables. Sin embargo, los transformadores modernos a veces están llenos con aceite no inflamable o son dispositivos de tipo seco (refrigeración por aire sin aceite).

Los problemas de incendios con los transformadores son similares a los de los motores; sin embargo, las condiciones mecánicas y de alta corriente de arranque de los motores no son aplicables. Algunos de los equipos electrónicos que contienen los transformadores son conocidos por causar incendios debido a la ausencia de fusibles o por la selección inadecuada de fusibles por parte del fabricante. Los dispositivos de alta corriente pueden ser capaces de inducir calentamiento por inducción magnética, pero esto está fuera del alcance de las investigaciones incluidas en este texto.

Motores eléctricos

Además de las bobinas, los motores tienen partes móviles. Algunos tienen interruptores centrífugos que funcionan cuando el motor alcanza el 75 por ciento de su velocidad normal de operación. Otros motores requieren una conexión eléctrica a la parte móvil de la armadura o el rotor llevada a cabo por escobillas que se montan en un contacto móvil (conmutador o anillo deslizante).

Los motores eléctricos presentan numerosas posibilidades de encenderse incluidas las siguientes:

- Sobrecalentamiento debido a corriente excesiva.

- Bobinas defectuosas o excesiva carga mecánica lo que impide alcanzar la velocidad de funcionamiento adecuada.
- Arcos de interruptores centrífugos o escobillas.
- Chispas generadas de fricción con partes móviles.
- Sobre calentamiento debido al uso excesivo más allá de su ciclo de trabajo nominal.

Estos peligros pueden ser superados con la construcción de una estructura en el motor, de manera que las piezas eléctricas estén encerradas adecuadamente o mantengan el material inflamable lejos.

El encendido del motor de un equipo de trabajo pesado presenta peligros como formación de arcos de corriente que rompen los contactos y el calor producido por las formas de encendido del equipo. Los peligros de sobrecargar un motor pueden ser superados con la adecuada protección de sobre corriente. Los peligros de incendio más comunes en los motores son los siguientes:

- La ubicación cercana de materiales inflamables pueden causar que se enciendan por arcos o chispas.
- La colocación en un lugar húmedo o donde el objeto sea expuesto a los vapores corrosivos.
- En un ambiente sucio o empolvado
- Por combustión (la falla del aislante en las bobinas) los cuales pueden ser a causa de una sobrecarga, estancamiento del rotor o en algunos casos, un muy bajo voltaje en las terminales del motor.

- La inapropiada protección de sobre corriente; excepto por el arranque manual de los motores de 1 hp o menos. Cada motor debería ser protegido con un aparato adecuado de sobre corriente. (Tales aparatos pueden ser internos o externos).
- El equipo de arranque que produce arcos y que no está colocado lejos de los materiales inflamables.
- Un motor trifásico protegido por fusibles en el cual un fusible se funde o una superficie del circuito se abre mientras que el motor es arrancado u operado.

Análisis de motores posterior a un incendio

La investigación de los motores continúa dando información útil. Cuando los motores eléctricos se encuentran en un área de incendio cerca del punto que se cree es el origen, una evaluación minuciosa debería ser realizada para determinar si el fuego provenía directamente del fondo de las bobinas o si el daño fue el resultado del calor conducido hacia las bobinas del fuego exterior de la estructura del motor.



Figura 10-35A: Falla de un motor cuando un engranaje provocó un cortocircuito en la estructura. *Courtesy of Peter Brosz and Associates Forensic Services Inc. Professor Helmut Brosz, Institute of Forensic Electro-Pathology.*



Figura: 10-35B: Un acercamiento de una falla del bobinado del motor. Courtesy of Jean-Claude Martin, Institut de Police Scientifique et Criminologie (IPSC), Lausanne Switzerland.

La figura 10-35b es un ejemplo de una falla en la bobina del motor que encendió el barniz aislante y le dio lugar al fuego. Si el eje está congelado (no giraría), esto puede ser una indicación de que el calor era interno debido a que los motores pequeños tienen mucho menos inercia y este síntoma no es confiable. Si el motor estaba en funcionamiento durante el fuego, los fragmentos derretidos de la soldadura lanzados cerca del interior de la carcasa del motor, a veces pueden ser encontrados en motores que tienen un conmutador (un conector rotativo eléctrico con cables soldados).

La fricción causada por sobrecarga es indicada si la correa del motor está más dañada donde pasan las poleas. El fuego de otro tipo de fuentes de daños del motor traba mucho más entre las poleas y a menudo hace menos daño a las correas que están protegidas por las poleas. Si inmediatamente después de un fuego, la estructura del motor está demasiado caliente para ser tocada, pero el hierro o el acero de similar tamaño en la misma área están relativamente frescos, esto indica que el calor interno es del motor. Un motor que está trabado o que no esté en funcionamiento total, se sobrecalentará por exceso de corriente, el cual puede ser causado por un defecto del

motor; el fallo de los aislantes de las bobinas, cojinetes ajustados, un motor muy pequeño para lo que se va utilizar o una carga congelada o ajustada y demás.

Usualmente cuando un motor eléctrico queda completamente destrozado por dentro, por el incendio, no prueba que el motor estaba defectuoso. Esto puede indicar una condición de sobrecarga o posiblemente algo que se trabó en el motor e impidió que encendiera. Si el motor era capaz de operar con la carga parcialmente trabada; el fuego pudo haber empezado por la fricción de las correas o poleas, incluso por una interferencia externa (como se ve en la figura 10-36). Los incendios de los motores eléctricos pueden ser causados por cojinetes que no fueron lubricados, fallas de los mecanismos o el exceso de suciedad en el motor. Si se permite que la suciedad se acumule en motores que estén calientes, esto puede ser objeto de ignición.

Los motores viejos son generalmente físicamente más grandes para una determinada potencia que los motores modernos. Además los motores modernos son diseñados usualmente para operar a más altas temperaturas que los motores viejos porque usan un aislante de alta temperatura moderno. La placa de identificación o la industria fabril, se deben consultar antes de que se tenga dudas sobre el sobrecalentamiento del motor.



Figura 10-36: El roce del eje del motor con una pieza de ropa en el aparato causó un incendio en la secadora. Courtesy of Joe Bloom, Bloom Fire Investigation, Grants Pass, OR.

Calentadores fijos

Los calentadores radiantes eléctricos que son instalaciones fijas y el cableado que está dentro del sistema eléctrico de un edificio no deberían pasar por alto como una causa potencial de un incendio. Estas instalaciones pueden estar localizadas en paredes, pisos e incluso en las estructuras de los techos. Estas son diseñadas para operar bajo ciertas condiciones de operaciones prolongadas y bajo la limitada disipación de calor; pero quizás estas podrían estar ocultas, por lo que la atención a los combustibles o aislantes empacados que estén muy cerca, debajo o sobre ellas, no sería dada a menudo. La Comisión de Seguridad de Productos del Consumidor (CPSC) estimó que los calentadores y estufas fijas de (gas y electricidad) fueron los responsables de 4500 incendios, 8 por ciento de todos los 56 500 incendios residenciales accidentales que sucedieron entre el 2004-2006²¹.

Electrodomésticos

Se debe recordar que los aparatos eléctricos pueden ser divididos en dos categorías en general: Los conductores fijos, interruptores, dispositivos protectores y las salidas del sistema de distribución, así como todo lo portátil como las lámparas móviles, herramientas y aparatos pueden ser conectados a ese sistema.

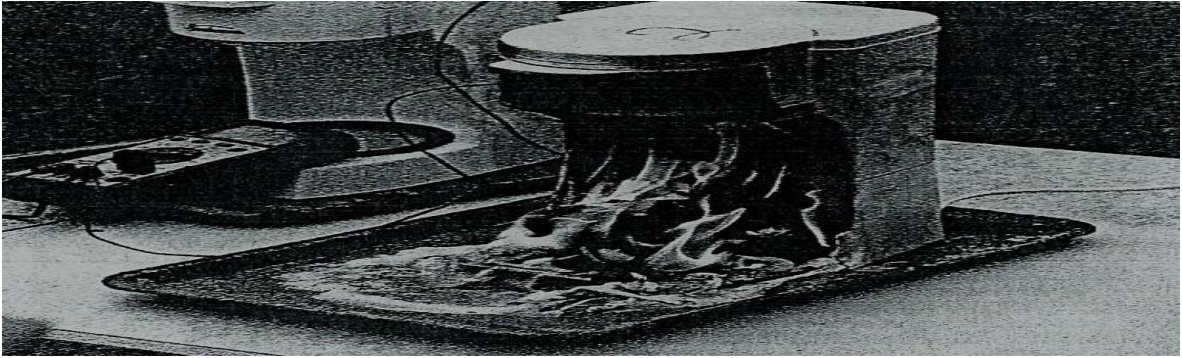


Figura 10-37A: Cafetera consumida por el fuego debido al escape de calor cuando los TCOs fueron desactivados.



Figura 10-37B: Después del fuego se muestran los elementos del incendio, cables de poder y los TCOs.

El sistema de distribución fija debe cumplir (en la mayoría de las áreas) con las normas estrictas y no debe ser cambiado por un propietario promedio o inquilino. Así que usualmente se plantea menos probabilidad del calor no deseado.

Los aparatos y todos los otros utensilios eléctricos son tema de más y más usos indebidos; junto a eso, se pueden añadir todos los riesgos planteados. Por mucho, el porcentaje más grande de incendios es iniciado por los electrodomésticos; sin embargo, estos incendios son más fáciles de detectar y extinguir por el usuario que aquellos incendios que están detrás de las paredes y en los techos. Ver la figura 10-37 y 38 como ejemplo de incendios en electrodomésticos.

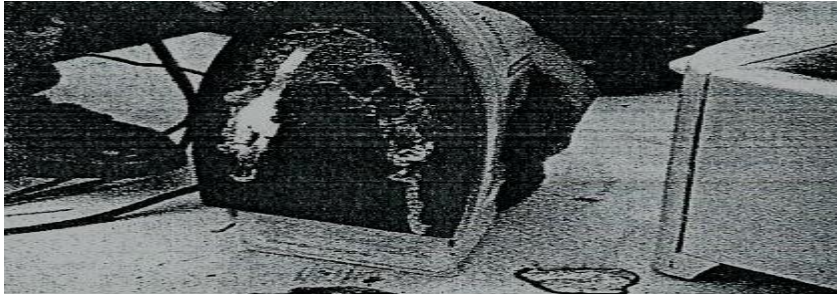


Figura: 10-38A: Escape de calor en una plancha de ropa (TCOs desactivados). Courtesy of Steve Riggs, Public Agency training Council.



Figura 10-38B: Los componentes plásticos estimulan las grandes llamas. Courtesy of Steve Riggs, Public Agency training Council.

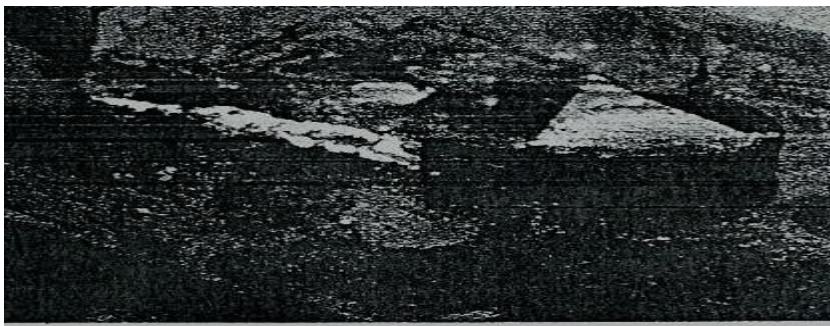


Figura 10-38C: los retos después del fuego muestran de la base de aluminio derretida. Courtesy of Steve Riggs, Public Agency training Council.

Los aparatos eléctricos se encuentran cerca de todo lugar y si estos producen cantidades de calor ya sea por diseño original, por fallas o simplemente representan una fuente conveniente para todo arco importante, su posible contribución a la causa de un incendio no debería ser pasada por alta. Las fallas con los cables de poder y enchufes pueden ser el resultado del diseño deficiente o uso indebido del consumidor. Debido a que los cables de poder y enchufes son tema de mal uso, las fallas en ellos probablemente representan la mayoría de las causas de incendios de electrodomésticos.

Los indicios de la deficiente resistencia de contacto y los tamaños inadecuados de conductores fueron previamente comentados en este capítulo. La fuente de un nuevo problema son los electrodomésticos hechos en China, cables de extensión o las regletas que son hechas con conductores demasiado pequeños para llevar corrientes normales.

Estos conductores pequeños pueden sobrecalentarse rápidamente y causar que se enciendan los componentes plásticos adyacentes.



Figura 10-39A: El patrón en las paredes indica el origen en la secadora. Courtesy of Det. Mike Dalton, Knox County Sheriff's Office, Knoxville, TN

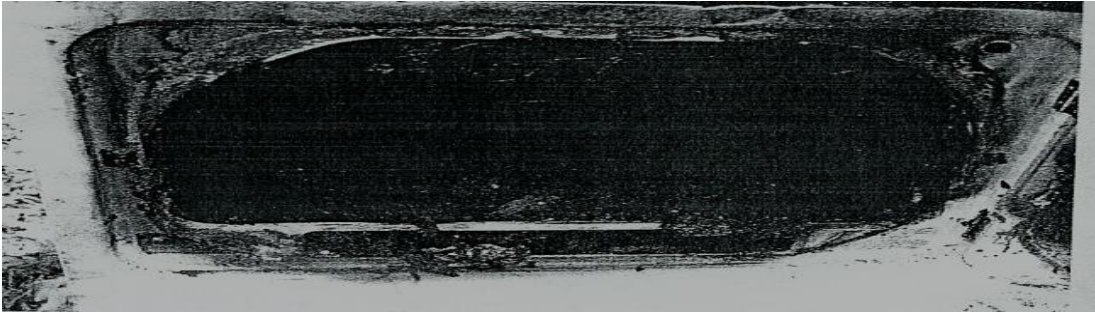


Figura 10-39B: Fuego que se produjo en el interior quemó la ropa dentro del tambor. Courtesy of Det. Mike Dalton, Knox County Sheriff's Office, Knoxville, TN

Algunos aparatos eléctricos debido a su alto poder de carga, altos voltajes o por sus ubicaciones indebidas merecen atención especial.

Secadoras de ropa

El alto uso de la energía, las altas temperaturas producidas incluso en el uso habitual, lugares con polvo y humedad y el mal mantenimiento (como no limpiar el filtro regularmente) están asociados a incendios en las secadoras de ropa. Además la pelusa se puede acumular alrededor de los motores y calentar ciertos elementos (especialmente si no está apropiadamente ventilada) (ver las figuras 10-39a y b.) Las secadoras de ropa son responsables de un estimado de 11.7 por ciento de incendios en los hogares²².

Calentadores eléctricos portátiles

El alto uso de la energía, las altas temperaturas y la falta de uso (bloqueado por muebles o estar en contacto con equipamientos inflamables o ropa) están asociados con incendios que tienen que ver con calentadores eléctricos portátiles. Estos aparatos son responsables de un 2.8 por ciento de incendios en los hogares²³.

Cocinas, hornos pequeños, aparatos de cocina eléctricos

El alto uso de la energía, las altas temperaturas producidas y la cercanía de combustibles (como comidas, utensilios y ropa) están asociados a incendios que implican cocinas eléctricas, hornos y aparatos eléctricos. La CPSC (Comisión de Seguridad de Productos de los EE.UU.) indica que estos electrodomésticos son responsables de un estimado de 37.3 por ciento de los incendios en los hogares; sin embargo, estos son incendios que pasan en la cocina. Los pequeños electrodomésticos pueden ser peligrosos debido a la carga de combustible que tiene la comida. En la figura 10-40 se puede observar como un sartén se incendia por el aceite de cocina. El CPSC estimó que el equipo de cocina fue el responsable de un 7.5 por ciento de muertes por incendios del 2004 al 2006²⁴.

Lavaplatos

Aunque los lavaplatos usan agua para lavar los platos, estos tienen un número fallas por sobrecalentamiento. Estos han sido conocidos por sobrecalentarse a la hora secar, la falta de prevención del daño de los cables cuando se abre o se cierra y también el ingreso de humedad y otros fluidos en el área donde están los cables presentes causa un rastro de arco y la ignición de combustibles cercanos.

Televisores

Los altos voltajes y los malos diseños (se incluye el uso frecuente de materiales inflamables para armarios) están asociados a incendios en los televisores. De acuerdo al CPSC hubo muchos incidentes de incendios en estos aparatos de 1970 al 1974. En 1979 la CPSC estimó que aproximadamente un 2 por ciento de los incendios en los

hogares, algunos 11 000 incidentes causaron 160 muertes, como resultado de los televisores.

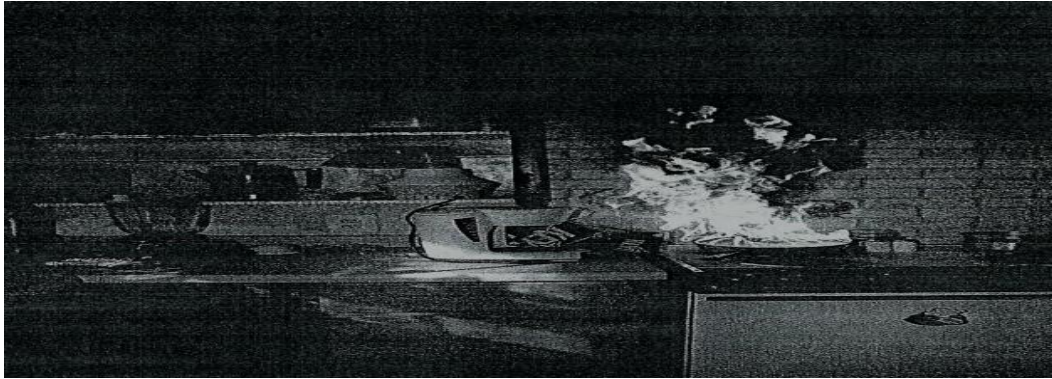


Figura 10-40: Una hoyita de cocinar en fuego envolvió los gabinetes que estaban arriba. De este punto, el fuego se esparció de una forma muy rápida.

Desde 1974 la frecuencia ha ido disminuyendo por los nuevos cables que tienen los televisores más recientes, también porque trabajan a temperaturas menores y los gabinetes están hechos de materiales resistentes al fuego²⁶. En el 2006 ese número había caído a 700 incendios, un 0,2 por ciento de fuego en los hogares, sin muertes registradas (incluyendo radios y fonógrafos)²⁷. Excepto por los televisores que se vendieron en Norte de América y Japón, donde el plástico de los gabinetes estaban hechos de estireno no resistente al fuego o de algún material similar. En el Reino

Unido ha habido un gran número de televisores que se han encendido en fuego por dejar candelas prendidas.

Se debe tener en cuenta que es posible que los incendios que se originen por accidente o incendiario pueden destruir todos los elementos combustibles que estén dentro de una televisión moderna. En tales casos es incluso imposible para los expertos de laboratorio determinar si el incendio empezó dentro del equipo o en otra

parte debido a la destrucción de las señas del diagnostico que son necesarias para tal resolución.

Alumbrado Eléctrico

Los dispositivos de iluminación y las cuestiones de especial interés para el investigador de incendios incluyen los balastos magnéticos y electrónicos fluorescentes, el sobrecalentamiento de portalámparas fluorescentes, las fallas en las lámparas al final de su vida útil y otras cuestiones acerca de lámparas, como se explica a continuación.

Desde el 2003 al 2006, la Asociación Nacional de Protección contra el Fuego (NFPA) calculó que anualmente hay 2 800 incendios en estructuras no residenciales que fueron atribuibles a la categoría de la iluminación²⁸. La NFPA también calculó que 5 770 incendios en los hogares fueron vinculados por bombillas o lámparas, las cuales causaron 76 muertes y 181 millones de dólares de daños en el 2006²⁹.

Balastos magnéticos

Los balastos usados en los dispositivos de iluminación fluorescentes crean un alto voltaje que inicia descargas de (corriente) a través del gas que está dentro y limita la corriente una vez que el arco está establecido³⁰. Mientras que la mayoría de los balastos nuevos, puestos al servicio, son electrónicos; hay millones de balastos magnéticos en uso, especialmente los dispositivos que utilizan las lámparas antiguas T12 de 3.81cm (1.5-in) de diámetro. En Europa los balastos magnéticos son usualmente usados en los nuevos dispositivos fluorescentes. Los balastos magnéticos generan una considerable cantidad de calor cuando están funcionando. En Norte

América los balastos para nuevos dispositivos han sido fabricados desde 1968 y todos los balastos fabricados desde 1984 han sido equipados con un reajuste automático de protectores térmicos, los cuales reducen potencialmente los incendios causados por sobrecalentamiento de balastos³¹. Sin embargo los balastos magnéticos no son a prueba fallas, si el protector falla al detectar un exceso de temperatura o si sus contactos se sueldan, una ocasión de sobrecalentamiento podría continuar.

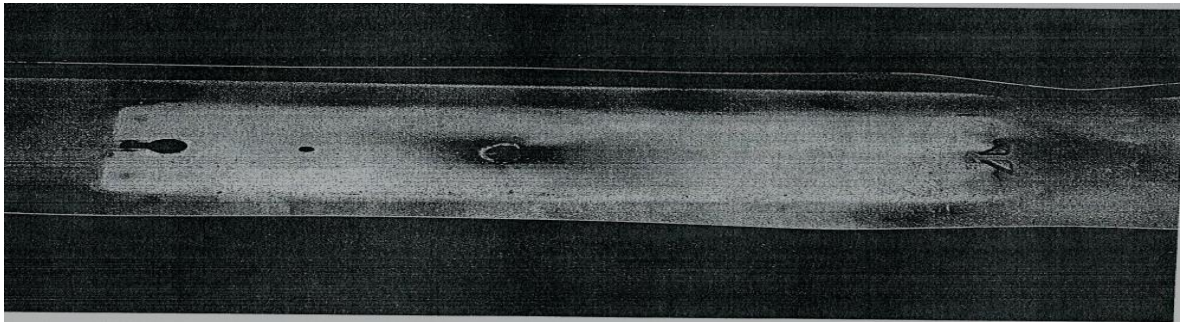


Figura 10-41: Un ejemplo de un arco dentro de un balasto magnético que penetró la textura del metal.

Bajo condiciones ideales, un balasto puede alcanzar temperaturas suficientes para encender combustibles por encima de la instalación, como una baja densidad de las de las baldosas o el aislamiento térmico de una celulosa. Además si continúa el sobrecalentamiento, este puede llevar a un evento de arco que es lo suficiente energético para penetrar ambos el estuche del balasto y la estructura del aparato (visto en la figura 10-41). El metal fundido y los gases en combustión del compuesto vaporizado encapsulado expulsado fuera del dispositivo como resultado de un evento puede tener la energía suficiente para encender materiales combustibles cercanos³². La mayoría de los dispositivos tienen cubierta metálica que previene el contacto, pero estas podrían dañarse debido al mal mantenimiento. Las estadísticas de NFPA del 2003

al 2006 indican que un 26 por ciento de los incendios no residenciales son atribuidos a la iluminación de dispositivos fluorescentes o balastos³³ (Ver la figura 10-41).

Los aparatos fluorescentes más antiguos con balastos magnéticos pueden producir incendios a partir de la descomposición de los balastos de los transformadores, los cuales contienen un compuesto de relleno inflamable. Algunos balastos antiguos tienen voltajes desde los 700 hasta los 900 V y operan cerca de los 400 V; las nuevas unidades operan a un menor voltaje. Estos están diseñados para operar continuamente a 40°C (100°F), pero la temperatura puede incrementar más. Este calor a veces causa derretimiento y la vaporización de contenidos inflamables y pueden incendiar los materiales del techo; los vapores pueden combinarse y encender una casa. Los primeros balastos no tenían protección térmica. Las actuales o las nuevas unidades contienen un interruptor de sobrecarga térmica que inhabilita el electrodoméstico en el evento del sobrecalentamiento, estos protectores térmicos están diseñados habitualmente para abrirse a los $110^{\circ} \pm C 5^{\circ}C$ (230°F).

Balastos electrónicos de arranque instantáneos

Los balastos electrónicos generan mucho menos calor interno y operan a temperaturas considerablemente bajas comparándolas con sus contrapartes magnéticas. Como regla, éstas están fusionadas a lo interno o están apropiadamente con una protección térmica. Como resultado, la causa de fuego debido a una falla en los balastos electrónicos es extremadamente inusual.



Figura 10-42A: Un laboratorio recreó un evento de arco en progreso con un portalámparas de luz fluorescente con un balasto electrónico que se encendía instantáneamente. Courtesy of Richard E. Korinek, P.E., Synergy Technologies LLC, Arbor Vita, WI.



Figura 10-42B: El resultado de un arco previo en el contacto del portalámparas es debido a la inadecuada inserción de la lámpara. Courtesy of Richard E. Korinek, P.E., Synergy Technologies LLC, Arbor Vita, WI.



Figura 10-42C: Un claro ejemplo de un arco en el contacto del portalámparas (segundo de la izquierda) que resultó en un incendio. Courtesy of David W. Powell, SYTEK Consultants, East Syracuse, NY

Los balastos electrónicos de arranque instantáneos usan un voltaje de (5-600 V) para encender las lámparas. Si la lámpara se coloca inapropiadamente, un arco en el portalámparas, entre el eje de la lámpara y los contactos, puede ocurrir debido a los

altos voltajes presentes. Las temperaturas extremas como resultado de un arco prolongado pueden degradar el soporte de la lámpara en materiales inflamables, se pueden derretir los contactos de latón y dar la posibilidad de una ignición, como se muestra en la figura 10-42a-c. Debido a que las lámparas pueden permanecer encendidas mientras el arco está ocurriendo en el portalámparas, el evento del sobrecalentamiento puede progresar y posiblemente dar lugar a la ignición, antes de que los ocupantes estén conscientes del problema³⁴.

Accesorios para lámparas de 8 pies (comercial)

Algunos portalámparas grandes incorporan contactos que se accionan a resorte, en los cuales, estos, conducen la corriente de la lámpara. Un número de incendios han sido atribuidos al relajamiento térmico de los resortes en los portalámparas³⁵. El envejecimiento y el esfuerzo térmico pueden involucrar una mala conexión y el arco puede ocurrir degradando el portalámparas mientras que la lámpara permanece prendida. Otra variación es el inapropiado espacio y el montaje de los portalámparas en la estructura, esto puede causar una mala presión y dar como resultado un arco y el sobrecalentamiento.

Lámparas compactas fluorescentes (CFLs)

Las lámparas compactas fluorescentes son cada vez más comunes y las fallas por el calor en los electrónicos están encubiertas en las bases plásticas las cuales son cada vez más vistas, como se ve la figura 10-43. Estas lámparas están destinadas a utilizarse con la base hacia abajo, pero los aparatos de iluminación de muchos hogares requieren que sea horizontal o incluso que la instalación sea hacia arriba. Algunos LFCs (lámpara

fluorescente compacta) han sido objeto de atención por CPSC avisando más fallos reportados³⁶. Tales lámparas pueden también sobrecalentarse si son usadas con un regulador de intensidad³⁷.

Lámparas fluorescentes T5

Ahora están disponibles los sistemas de iluminación que utilizan las nuevas lámparas más delgadas, como las lámparas T5 con 15-mm (5/8-in) de diámetro. Al final de la vida útil de una lámpara, el sobrecalentamiento puede ocurrir resultando en un agrietamiento, derretimiento del cristal y sobrecalentamiento del extremo de la lámpara³⁸. Las temperaturas pueden alcanzar 700°C (1335°F) lo suficientemente alto para encender materiales inflamables que estén cerca de ahí. Tal calentamiento podría dañar el portalámparas lo que da como resultado una mala conexión entre los pines de la lámpara y el portalámparas llevando esto al sobrecalentamiento³⁹.

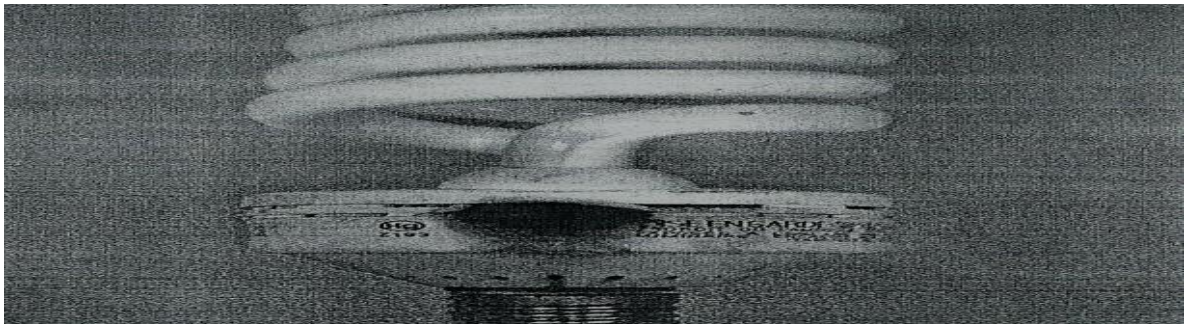


Figura 10-43: El sistema electrónico en la base de plástica de LCF podría fallar, lo que perforaría la cubierta y provocaría un incendio. Courtesy of Steve Riggs, Public Agency Training Council

En cualquier situación donde el sobrecalentamiento suceda en lo último de la vida útil de las lámparas fluorescentes, está la posibilidad de que se encienda una flama si hay materiales inflamables cerca. Por ejemplo, muchos difusores de los dispositivos

están hechos de plástico acrílico que relativamente tiene una baja ignición en un intervalo de 195° C-289° C (383° F-552° F)⁴⁰.

Luces de acuarios

El ambiente húmedo cerca de los acuarios puede generar corrosión en las conexiones eléctricas de los portalámparas. El sobrecalentamiento por una mala conexión ha sido mostrado por generar calor, encender el portalámparas y luego propagarlo a la estructura del aparato, el cual es hecho de plástico inflamable. La falta de presión al contacto podría contribuir al factor de los incendios⁴¹. Como por ejemplo en las figuras 10-44a-c.

Iluminación de halogenuros metálicos

La iluminación de halogenuros metálicos (HM) es un tipo de descarga de alta intensidad con vapor de mercurio y con tipos de sodio de alta presión. Dentro de la estructura de vidrio delgado externo de la lámpara de HM hay un tubo de arco interno de cuarzo fundido. El arco del tubo opera a altas temperaturas, mayores a 1100°C (2000° F) y a presiones que oscilan de los 73 a los 441 psi (5-30 atm)⁴². La mayoría de lámparas HM fallan de forma pasiva al final de su vida útil, en algunos casos el tubo del arco interno se puede quebrar debido al debilitamiento al cuarzo del arco del tubo.

La ruptura puede ser un evento violento, lo que rompería el exterior del vidrio y dispersaría 1100°C (2000 °F) las partículas de vidrio de cuarzo fuera del aparato. Los cuarzos calientes en tal evento han sido responsables de encender componentes inflamables de aparatos de iluminación, materiales que están abajo e incluso los pisos de gimnasio de madera⁴³.

Lámparas incandescentes

Como se vio en el capítulo 6, las lámparas incandescentes que están con su base hacia abajo no producen temperaturas suficientemente altas para encender materiales inflamables al aire libre. No hay ninguna garantía hacia el investigador de incendios de que esas lámparas han sido usadas correctamente. El uso normal para la mayoría de las lámparas implica circulación libre de aire fresco alrededor de esta. Cualquier encierro que restrinja el flujo de aire alrededor de la lámpara debe ser de material no inflamable y el investigador debe determinar que no hubo materiales inflamables en contacto con la bombilla mientras estaba incandescente. Las lámparas portátiles por su diseño con extensión de cables e incandescentes están más propensas a ser cubiertas con harapos, ropa y virutas de madera durante su uso. Si se deja en esa condición, se puede producir altas temperaturas en exceso lo que encendería la ropa o madera (mencionado en el capítulo 6).

Las lámparas y los aparatos de iluminación fueron vinculados con un 4.7 por ciento de los incendios en los hogares en el 2006 de acuerdo con la CPSC⁴⁴. Las lámparas incandescentes de alta potencia (de más de 150 W) debido a sus altas temperaturas pueden generar un riesgo de prenderse si combustibles ordinarios entran en contacto directo con sus capas externas. Como se vio en el capítulo 6, las lámparas de halógeno tienen superficies muy calientes en sus capas de cuarzos⁴⁵. Las lámparas producen altas temperaturas en sus plafones metálicos y su intensidad puede derretir difusores de luz y otros plásticos que estén cerca de ellos.

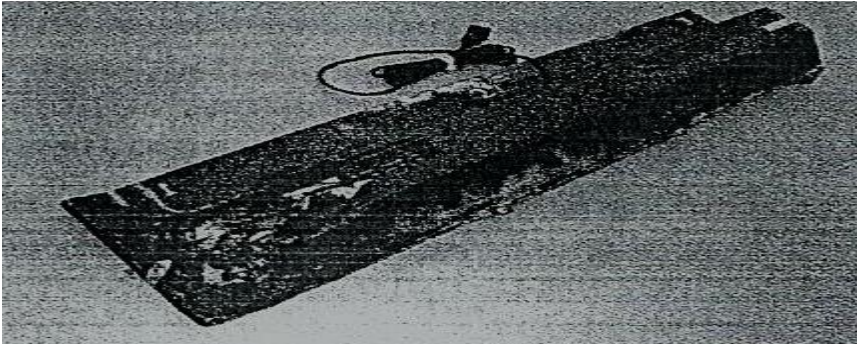


Figura 10-44 A: Un claro ejemplo de la luz de un acuario en la cual un portalámparas se sobrecalentó y causó un incendio residencial. Courtesy of Richard E. Korinek, P.E., Synergy Technologies LLC, Arbor Vitae, WI.

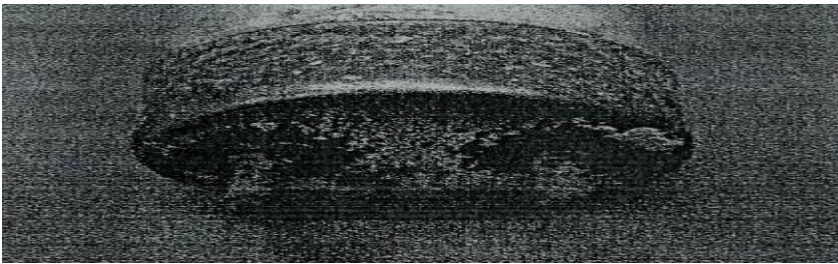


Figura 10-44B: La corrosión en los bordes de la lámpara que estaba en un acuario fue la causa del fuego estructural. El fuego ocurrió en el otro borde de la lámpara. Courtesy of Richard E. Korinek, P.E., Synergy Technologies LLC, Arbor Vitae, WI.



Figura 10-44C: Un ejemplo de un portalámparas que por el sobrecalentamiento de un conector que estaba al lado derecho causó un incendio en la luz del acuario. Courtesy of Richard E. Korinek, P.E., Synergy Technologies LLC, Arbor Vitae, WI.

Mantas Eléctricas

Las mantas eléctricas han sido responsables de algunos incendios. La causa de estos incendios es usualmente atribuido al mal uso. Algunas mantas son controladas por un termostato que está localizado en un borde y cuando están parcialmente cubiertas con mantas adicionales o por otros materiales es posible que otras partes empiecen a sobrecalentarse. Si el control principal se deja en “alto” en una habitación fría, la corriente puede continuar así y provocar que la parte que está cubierta se sobrecaliente. Las mantas han causado incendios cuando se han plegado entre un colchón y un somier acolchonado, encajonadas entre la cama y una pared o plegadas en la base de la cama. Puede ser difícil determinar si el incendio fue producido por una manta o por otra causa, como fumar en la cama, a menos de que el fuego fuera detectado antes y que el carbón pueda ser rastreado. Algunas veces el termostato y el control permanecen intactos después de un incendio, esto puede proveer información para ver si la manta eléctrica fue encendida. Algunas mantas tienen múltiples TCOs incrustados, así que si una parte de la manta alcanza una alta temperatura, la corriente será interrumpida. La localización y distribución de los cables delgados de calentamiento pueden revelar el uso o abuso de la manta en el momento del incendio.

Las mantas eléctricas se han desarrollado a partir de cables de resistencia protegidos de numerosos TCOs a coeficientes positivos de temperatura (PTC). Este cable varía según su temperatura (entre más caliente más resistencia va tener), tiene dos conductores, cada uno enrollado alrededor de un núcleo de poliéster y están incrustados a una capa aislante. Casi siempre, hay un control termostático externo y un circuito de seguridad en la manta eléctrica, las fallas pueden ocurrir en los conectores o

en el circuito de seguridad e incluso en los cables rotos de PTC, los cuales podrían causar un arco a través del carbón mientras el cable se degrada.

Cables de extensión

Los cables de extensión son elementos movibles del sistema eléctrico, aunque no sean parte de un sistema. Estos cables están vinculados a un número enorme de incendios en Norte América y en otros países, debido a la variedad de formas en las que se abusa de ellos. Comúnmente sus múltiples salidas ofrecen una oportunidad de conectarse con muchos aparatos en su capacidad típica de 5 a 15 A lo cual es excesivo.

La índole de sus usos está en ocultarlo debajo de los muebles o alfombras, lo que da como resultado que la disipación del calor sea severamente limitada. El aislante rápidamente se derrite y se carboniza en situaciones de sobre corriente; el carbón también provee un camino semiconductor entre conductores que pueden crear incluso más calor sin dar paso suficiente a la corriente para activar los aparatos protectores.

También pueden ser utilizados en espacios reducidos (como rodapiés) o soportar mucho daño y supresión durante el incendio, lo que puede ser pasado por alto durante una revisión.

Cintas y cables térmicos

Los edificios en ambientes fríos pueden tener una resistencia eléctrica térmica en forma de tiras de cinta, las cuales están diseñadas para ser envueltas alrededor de agua o en tuberías de alcantarillado, susceptibles a la congelación, o para reducir el acumulamiento de hielo y nieve. La cinta puede envolverse en capas de aislantes inflamables o no inflamables ocultándola de la vista. Una cinta de térmica usualmente usa un cable térmico que se enrolla helicoidalmente a un filamento del núcleo o

zigzagueando entre dos cables con un termostato integral. El cable térmico contiene dos conductores paralelos, en una matriz carbonosa, la resistencia depende de su temperatura, la cual en temperaturas calientes, la matriz, tiene una alta resistencia sin flujos de corrientes y, en temperaturas bajas, la resistencia disminuye, esto permite que la corriente fluya y provea calor⁴⁷.

El mantenimiento de estas instalaciones es usualmente abandonada y la cinta aislante puede fallar (a lo largo de su longitud como también de sus conexiones) por una cantidad de causas después del uso prolongado. Como el aislante falla, el rastro del arco puede provocar un calor externo prolongado que no excede los límites de la protección de la sobre corriente y tales cintas han sido ligadas a muchos incendios en locales⁴⁸.

Baterías

Las baterías de iones de litio (Li-ion) y los iones de litio polímero (Li-Po) tienen el potencial para sobre calentar y encenderse debido a sus altas densidades de energía, materiales internos inflamables y la susceptibilidad para generar oxígeno⁴⁹. Las fallas incluyen cortos circuitos y sobrecargas. Ha habido numerosas llamadas de compañías de computadoras portátiles acerca de las baterías de litio en los últimos años. Las baterías de plomo acido se han conocido por explotar debido a los cortos circuitos o cuando las conexiones externas están flojas, encienden el gas de hidrógeno durante el proceso de carga⁵⁰. Algunos cargadores de baterías pueden desarrollar malas conexiones, además, cargar baterías no recargables puede provocar sobrecalentamiento.

Investigación relacionada con los incendios y la electricidad

Cuando un incendio ocurre, la sospecha de su causa usualmente recae en cualquier aparato eléctrico, basado en el hecho de que la electricidad puede causar calor y este calor puede producir un incendio. Debido a que la mayoría de las estructuras contienen cableado eléctrico o electrodomésticos en alguna parte, las causas que se relacionan con la electricidad son con frecuencia sospechosas. Sin embargo científicos calificados volvieron a revisar un estudio importante y del 20 por ciento de incendios atribuidos a la electricidad, solo el 9 por ciento fue ocasionado por la electricidad⁵¹. Algunas investigaciones se concentran en la electricidad como el causante por la sencilla razón de una sospecha basada en el mal entendimiento y los mitos. Básicamente cuando consideramos una causa eléctrica, la investigación debería contener las siguientes posibilidades:

- ¿La instalación o el artefacto fue diseñado para producir calor? Si es así ¿Cómo es que el calor se pasó de la unidad para incendiar el primer combustible? (sin saber cuál fue el primer combustible ¿Cómo se pueden evaluar de forma realística las posibilidades?) El mismo análisis aplica cuando el calor es un producto residual (como las lámparas incandescentes).
- Si la unidad o el aparato no fue diseñado para producir calor ¿Cómo es que la electricidad pudo escapar de su camino destinado para producirlo?
- ¿Estaba presente la protección térmica? si la había ¿Cómo fue que falló?

Cuando componentes o cables eléctricos se encuentran derretidos, inmediatamente hay sospecha de que el fuego y el derretimiento están directamente relacionados con una falla eléctrica. Las siguientes preguntas deberían ser consideradas.

- ¿El derretimiento fue provocado por el fuego o por una falla eléctrica?

- ¿Hay alguna evidencia de que alguna falla eléctrica ocurrió? (No es recomendado de que un objeto sea enchufado o energizado, esto puede destruir la evidencia y debería ser hecho después de una amplia revisión de todas las partes.
- Cuando una falla eléctrica es detectada ¿La falla fue causada por el fuego o el fuego fue causado por la falla?
- ¿Se libera suficiente energía por una fuente eléctrica para encender el primer combustible en la forma en que fue presentado a la fuente de ignición?

Los equipos eléctricos pueden iniciar incendios debido a uno o más de los siguientes eventos:
 - ✓ Errores de diseño: El blindaje térmico en una resistencia no está diseñado correctamente y la parte trasera del calentador se puede calentar de forma peligrosa o el aislante eléctrico entre los dos conductores no está diseñado apropiadamente y la unidad se puede doblar uniendo los dos conductores. Los aparatos de protección térmica están ausentes o mal ubicados.
 - ✓ Defectos de fabricación: La unidad fue diseñada apropiadamente, pero se olvidó instalar el blindaje térmico; se utilizó el cable o el aislante equivocado cuando la unidad fue hecha; las conexiones eléctricas quedaron sueltas y la alta resistencia por la mala conexión causó el aislante pirolizarse con el resultado de que se encendiera la carcasa plástica del aislante.
 - ✓ Instalación o uso inapropiado: El calentador se usa dentro de un armario cuya estructura se pone en contacto con combustibles o es instalado en una caja aislante donde pierde la refrigeración por convección necesaria para mantener las temperaturas externas de forma segura.

- ✓ El uso de equipo aprobado para una aplicación no aprobada: El equipo es usado donde hay mucha humedad o en un ambiente de alta temperatura para el cual no está diseñado. Un calentador controlado termostáticamente es utilizado en un entorno explosivo.
- ✓ Accidentes: Un calentador es apropiadamente diseñado e instalado, pero trapos caen sobre los cables de protección y se encienden. Una lata de laca diluyente es usada para limpiar derrames de azulejo y los vapores tocan los contactos del termostato cuando se extienden.

Si está apropiadamente diseñado, instalado y mantenido, los sistemas eléctricos para iluminación, calor y energía y para otras cosas, son convenientes y seguros, pero si no son bien instalados, usados y mantenidos de acuerdo con lo que se necesita puede causar un incendio y daños personales. Este hecho ha sido reconocido desde que la energía eléctrica empezó su uso comercial; desafortunadamente, la electricidad ha sido culpada por los investigadores de incendios cuando ellos no han podido detectar la causa inicial del incendio. Hay métodos en los cuales la información útil puede obtenerse por medio de los residuos eléctricos y la interpretación de un experto en este campo puede proveer un testimonio válido.

Con el pasar de los años, una variedad de indicaciones y guías han evolucionado para determinar la causa eléctrica de un incendio, algunas de ellas son confiables, pero otras no. Breves trabajos se han hecho para justificar estos indicadores porque primeramente estos se basan en explicaciones lógicas; de hecho, algunos experimentos han mostrado que muchos de los indicadores utilizados son producidos por mecanismos inesperados⁵². Cuando ha habido dudas de cómo se

provocó el incendio, los reportes mencionan inmediatamente que fue por la electricidad ya que “no hubo otra fuente” Esas especulaciones nunca deberían ser dichas y ninguna de las opiniones de deberían ser aceptadas solo por haberlas escuchado.

El conocimiento de los principales combustibles y el conocimiento básico de la electricidad, son herramientas esenciales para el investigador a la hora de acercarse a la escena de un incendio con el origen de una fuente de electricidad. Esto por supuesto incluye la mayoría de los casos porque hay pocas estructuras en las que hoy falte la electricidad. La energía eléctrica debería ser incluida en las pruebas de hipótesis.

Indicadores posteriores al Incendio

Los post indicadores son bastantes para ser considerados durante la investigación de un incendio. En el caso de incendios eléctricos, estos indicadores involucran daños en el cableado, toma corrientes, enchufes, electrodomésticos, conductores, exceso de calor y fallas eléctricas.

Cableado

Seguir un sistema eléctrico en una estructura quemada puede ser tedioso y una tarea que consume tiempo. Cualquier parte del cable restante podría dar información útil, pero los lugares más provechosos son donde se localizan las conexiones. Esto incluye la acometida, el centro de carga de la caja, otros fusibles, cajas de fusibles, interruptores, toma corrientes e instalaciones. Una atención particular se le debería dar a los circuitos de alta corriente como los calentadores,

estufas y secadoras. Cuando una parte de la estructura no tiene daños, la revisión va a mostrar cómo estaba el cableado antes del incendio.

El cableado que esté dentro de un conducto o caja de metal raramente mostrará un corto circuito, excepto cuando el aislante se destruya por el calor externo o por daños causados por animales como se muestra en la figura 10-32. Si el cable hace corto circuito, el arco generalmente permanece adentro, donde no puede encender materiales densos. Las chispas de metal incandescente han demostrado que el papel fino, las pelusas o el aserrín cerca del arco son totalmente inflamables. Por supuesto, si el arco en circuitos de alta corriente se quema a través del conducto, puede generar que se incendien materiales inflamables por las chispas de metal fundido y no por el arco en sí.

Los siguientes peligros probablemente se encuentran en el cableado:

- El daño de los cables aislantes causado por el roce en superficies ásperas cuando son tirados a través de conductos y cajas.
- El aislante del conductor está deteriorado por el tiempo, exposición al calor, humedad o vapores químicos.
- Daños mecánicos en los cables plásticos de aislamiento causados por roedores, (con contaminación posterior) bordes afilados, clavos o grapas a través del aislante (no por golpes externos).
- Conductores destinados para una particular carga de uso que sea sobrecargada (una sustitución significativa de un aparato para una mayor capacidad de sobre corriente)

- Conexiones entre conductores inapropiadamente soldadas que permiten que las conexiones de alta resistencia desarrollen calor localizado con una posterior degradación de componentes plásticos.
- Cableado (a veces el cable de la lámpara de calibre 18) instalado para uso temporal y que no se sustituye.
- Fallas en la tierra o por una distribución neutral de los sistemas que impulsa la corriente suministrada a un aparato o salida. En vez de regresar mediante el camino del conductor, a través de un camino alternativo de conductos, por revestimiento de metal flexible y algunas veces incluso por medio de instalaciones de cañerías, conductos de calefacción o malla de alambre de estuco de la casa⁵³, cubren de salidas o cajas de derivación eliminadas, lo que permiten que la suciedad y materiales ingresen.
- Conductores de “cableado abierto” sistemas separados por sus soportes en contacto con otros, con tubos o incluso con conductos.
- Los cables llevan corrientes considerables pero “seguras”, que se ponen debajo de aislantes, alfombras o ropa de cama enrolladas en una gran cantidad o expuestos a un ambiente de altas temperaturas, produce condiciones inseguras con respecto a la degradación del aislante.

Toma corrientes e interruptores

En ambientes explosivos, el principal riesgo de ignición de los toma corrientes e interruptores es el arco producido cuando el dispositivo es usado o cuando el enchufe es extraído mientras la corriente sigue corriendo. Muchos interruptores están diseñados o encerrados para permitir que en el arco ocurran

daños o efectos mínimos. La ignición de materiales combustibles por interruptores es debido a lo siguiente:

- La pérdida de contactos entre cables y terminales de interruptores permiten conexiones de alta resistencia y el resultado de calor. Esto puede ocurrir con conectores a presión, en unidades expuestas a vibraciones mecánicas como se ve en la figure 10-25 o con los cables de aluminio en unidades que no están diseñadas para eso.
- El Sobrecalentamiento debido a la sobrecarga.
- Las malas condiciones mecánicas por uso excesivo que permite el contacto entre conductores.
- Estructuras quitadas o no efectivas, (esto es verdadero con toma corrientes de plástico e interruptores en el uso diario).
- Corrosión o erosión de los conductores internos que producen conexiones de alta resistencia.

Aparatos electrónicos

En el comienzo los equipos electrónicos contenían tubos de calor que operaban a las temperaturas de una bombilla y podía causar un incendio si hacían contacto con materiales combustibles. En los viejos equipos electrónicos, a menos de que tuvieran un apropiado mantenimiento, los cables de alimentación podían deshilacharse o desgastarse, los fusibles inapropiados y la falta de cubiertas protectoras que eran hechas para retener las fallas podían causar algún incendio. Los equipos modernos usan dispositivos sólidos que generalmente funcionan a temperaturas bajas, corrientes bajas y voltajes bajos e internos.

Algunos fabricantes históricamente han sido flojos a la hora de proveer la apropiada protección de sobre corriente. Los rectificadores y transistores de energía han sido conocidos por fallar y causar que los transformadores se sobrecalienten, lo que provoca que el aislante se incendie por la falta de fusibles protectores e interruptores apropiados. Los conos de altavoz se conocen por encenderse por el exceso de corriente que pasa a través de la bobina de voz, debido a defectos en el transistor de energía, al cual le falta protección de fusibles, o bien, por estar saturado por un amplificador potente. La mayoría de equipos electrónicos de la casa son considerados aparatos de baja potencia, pero pueden ocurrir situaciones que no han sido anticipados por el diseñador.

Conductores

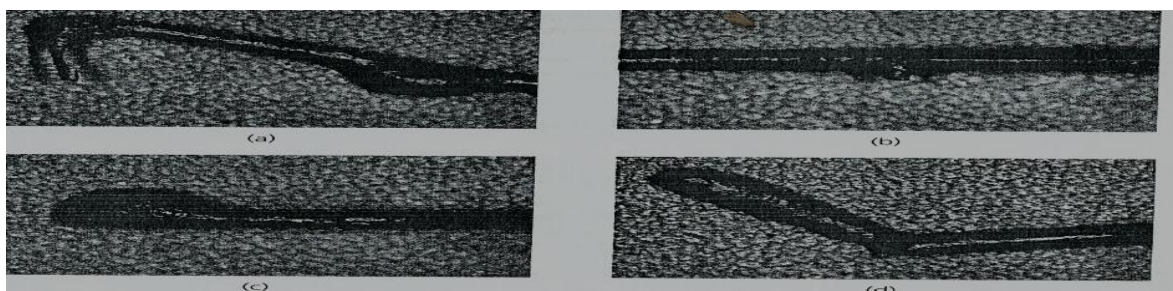
Con el pasar de los años, algunos investigadores erróneamente han aceptado la presencia de conductores con extremos cerrados o “redondeados” como primer indicio de un arco eléctrico. De hecho los exámenes de combustión han demostrado que los extremos cerrados pueden ocurrir por una exposición de una flama sin que pase ninguna corriente de electricidad. Por lo tanto, los investigadores de incendios deberían mostrar extrema precaución a la hora de reportar la presencia de conductores cerrados o redondeados como avisos de un arco eléctrico. Varios mecanismos implicados en el derretimiento de los conductores serán discutidos en las siguientes secciones.

Temperatura de fundición

Los extremos de los cables que muestran formaciones de gotas, cerradas y puntiagudas, son frecuentemente el resultado de un calentamiento localizado en

algunos lugares a lo largo del alambre, que han alcanzado una temperatura más alta que otras partes como se muestra en las figuras 10-45 a-e. La temperatura de fundición del cobre puro es de 1083°C (1981°F), la cual está sobre la temperatura promedio de un incendio.

En otras palabras, el alambre de cobre durante un incendio, está usualmente a una temperatura menor a la de derretimiento. Un área pequeña localizada a mayor temperatura como las causadas por un arco eléctrico, una carga de combustible concentrado o condiciones óptimas de combustión (fuego de post-combustión súbita con ventilación extra), puede resultar en una fundición localizada del alambre de cobre como se ha caracterizado previamente.



Figuras 10-45 A-D: Segmentos de cables fundidos como resultado de la exposición del fuego. Courtesy of Chris W. Korinek, P.E., Synergy Technologies LLC, Cedarburg, WI



Figura 10-45 E: Una vista microscópica del borde de un cable fundido de cobre provocado por el fuego localizado. Esto muestra lo abultado, la superficie uniformemente oxidada y los glóbulos fundidos del cable. Courtesy of Lamont "Monty" McGill Fire/Explosion Investigator.

Se ha mostrado que cuando el aluminio fundido entra en contacto con conductores de cobre, estos se pueden desgastar de gran forma a bajas temperaturas. El aluminio tiene

un punto de fusión de 660°C (1220°F) y el cobre de 1083°C (1081°F); pero, una aleación de dos metales, llamada eutéctico, tiene un menor punto de fusión, de 548°C (1081°F). El aluminio fundido de los conectores, cajas, conductores o incluso los artículos del hogar, pueden literalmente disolver conductores de cobre sin la intervención de la electricidad.

Fallas Eléctricas

Cuando cables con energía hacen contacto, no es una conexión segura; es como si dos cables descubiertos se tocaran sin ninguna tensión mecánica, usualmente un arco se produciría. La magnitud y duración dependerá de la protección de la sobre corriente (fusibles e interruptores) y bajo las condiciones físicas en los cuales los cables se conectan entre sí. El paso de la corriente produce temperaturas localizadas extremadamente altas, como se muestra en la figura 10-46. Si el arco no está confinado dentro de un recinto adecuado, la alta temperatura del arco podría incendiar materiales inflamables delgados o finamente divididos que estén en contacto. Esta situación a veces se refiere al arco primario. Investigadores japoneses han reportado la “micro deformación” de conductores atados en cortos circuitos, en los cuales los altos flujos de corriente hacen que las hebras se separen y se salgan⁵⁵.

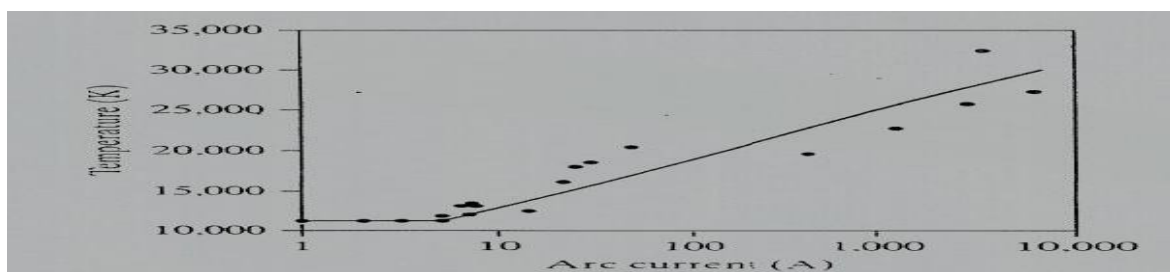


Figura 10-46: Gráfico de temperatura de arcos expuesto a una presión ambiente (datos experimentales). Courtesy of Vytenis Babrauskus, fire Science and Technology Inc, Issaquah, WA, reprinted from the Ignition Handbook.

Concurrente con el origen general y la causa de la investigación, el sistema eléctrico debe ser revisado para ayudar en la determinación del área de origen. El sistema de cableado eléctrico de cobre usualmente logra sobrevivir al calor de los incendios y deja daños como (agujeros, abalorios o partes cortadas), causados por la electricidad del arco a medida de que el fuego ataca el aislante alrededor de los conductores energizados.



Figura10-47: Una mirada microscópica del cable que muestra glóbulos fundidos de cobre en la superficie del conductor que fue causado por un arco eléctrico. Las estrías del trefilado son visibles solamente en el glóbulo izquierdo. Courtesy of Lamont “Monty” McGill, fire Explosion Investigator

El patrón de localización del daño dejado en el sistema eléctrico a veces es llamado “anomalías” y es a menudo más estable y menos frágil que el patrón del fuego dado a los materiales inflamables. El análisis del patrón del daño puede proveer valiosa información tridimensional acerca del progreso del fuego, puede llevarse a cabo en cables expuestos, así como también en cables que tuvieron energía y fueron expuestos al fuego. El arco eléctrico puede propiciar una fundición localizada en cables continuos, puede soldar, cortar conductores (y salpicar gotas de cobre fundido), (como se ilustra en las figuras 10-47 y 10-48), fundir los fusibles o interruptores que protegen los conductores.

Mapeo de fallas del arco

Si se traza el cableado del área sospechosa donde se originó el fuego y se elabora un diagrama del edificio con la ubicación del arco, podría haber una indicación del origen y del desarrollo del incendio. Como un principio general, el arco que se encuentre más lejos de la fuente de energía, puede ayudar a identificar el área de origen. A medida de que el fuego crece, el circuito puede interrumpirse cuando el fuego incendie el cableado más cercano (ya sea que active el OCPD o se rompan los conductores). Si el cable está cortado esto significa que a medida de que el fuego progresó, las mayores porciones de distancia de los circuitos van a estar sin energía y sin señales del arco, si el OCPD se activa, no habrá información adicional acerca del arco.

Rastrear las fallas del arco no es parte de la determinación de la causa, pero es usualmente útil para determinar el origen de cualquier incendio (estructural o vehicular). La figura 10-49a muestra como el fuego quema el cable aislante de energía. La fuente de corriente eléctrica en el cable está en la izquierda del (enchufe) al final del cable. El cable está en el piso y alimenta a un calentador que está al lado

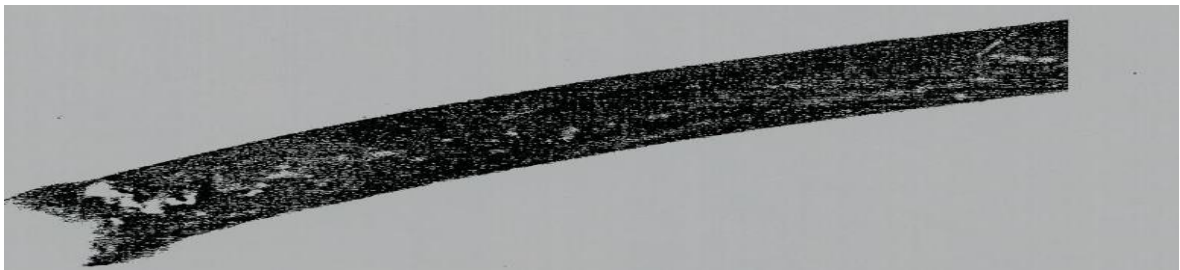


Figura 10-48 A: Una bola de cobre brillante en la punta de este cable oxidado y pequeños glóbulos que se adhieren al cobre fundido, son consistentes al haber sido expuestos a un arco eléctrico. Courtesy of Lamont “Monty” McGill, fire Explosion Investigator.

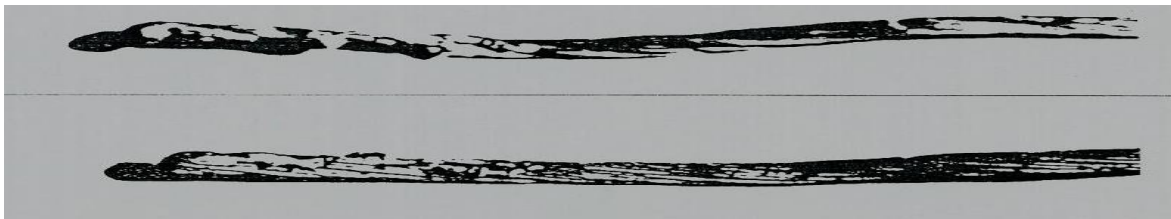


Figura 10-48B: *Numerosos alambres fundidos entre sí en áreas limitadas como resultado de la formación de arcos entre los conductores. Courtesy of Lamont “Monty” McGill, fire Explosion Investigator.*

derecho de la habitación. Si un incendio ocurre en el centro de la habitación por una extensión, (fuego#1) se incendiaría a través del cable aislante y una falla de arco ocurriría a medida de que el cable aislante se carbonice y degrade. Dependiendo de la resistencia del aislante degradado, el flujo puede cambiar de una corriente baja a una alta (se ha calculado que hasta 150A). Debido a que los conductores no están unidos y son libres de moverse, los flujos de corrientes son tan intermitentes que pueden retrasar la activación del OCPD. El resultado de esta falla de arco se rebordea a la izquierda en los conductores, como se ve en la figura 10-48b. Las gotas formadas en este caso cortaron los conductores, pero no fundieron el interruptor del circuito.

A medida de que el fuego #1 se expande en el área # 2, este quema el cable (hacia abajo) del punto original del arco y no produce más gotas debido a que el suministro de electricidad ha sido desconectado (ya sea cortando el conductor o activando el OCPD). Posteriormente cuando el fuego se expande, quema el cable en el punto #3 más cerca de la fuente, esto puede hacer que la fuente se corte debido a que el cable no ha sido desenergizado por el interruptor del circuito. Entonces el investigador puede determinar dónde el fuego encontró el cable energizado con solo mirar la parte de la moldura que va hacia el enchufe, el cual es la fuente de su energía eléctrica.

Si el fuego empezó en un calentador, habría una tendencia del cable de alimentación para fallar en el área del calentador. Por el contrario, una falla en el enchufe del cable de alimentación, deja residuos del arco (gotas) en los componentes del enchufe; pero no dejaría gotas abajo en el cable de alimentación o en el calentador si el cable se rompió. Si el fuego se inició en el cableado de un edificio, el investigador no esperaría encontrar fallas en el interior del cable de extensión o en cualquiera de los cables eléctricos posteriores, si el cableado fijo fue cortado.

El proceso puede describirse a través de la analogía del sistema de agua. Esta analogía se centra en el uso del patrón del charco y un corte, una manguera de jardín cortada para demostrar cómo el punto del charco más alejado de la fuente (del grifo) es el punto más probable donde la manguera se cortó.

En la figura 10-49b, el agua fluiría del primer corte dejando un pozo, posteriormente un corte más abajo no tendría que dejar ningún pozo debido a que la fuente del agua ha sido interrumpida por el primer corte. Después unos cortes más arriba del primer corte dejarían pozos hasta que el grifo se cierre. Si la manguera y los pozos son revisados después de que la manguera ha sido dañada, el pozo más alejado del grifo es el punto donde estaba el primer corte. Estos pozos son semejantes a las fallas del arco descritos en el ejemplo electricidad.

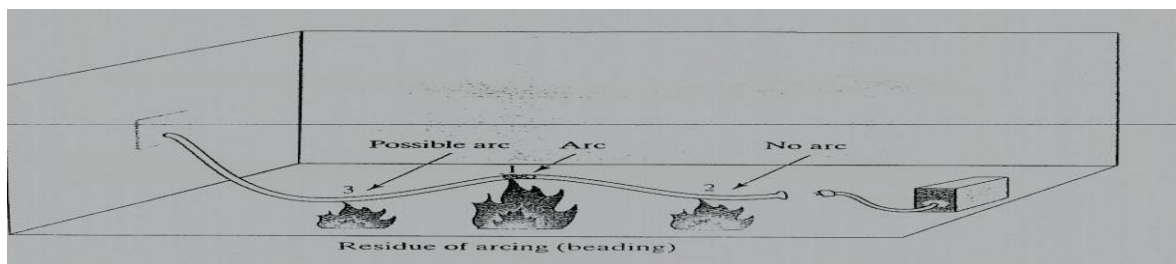


Figura 10-49 A: El fuego consumiendo un cable de alimentación lo que da como resultado un patrón de arco.

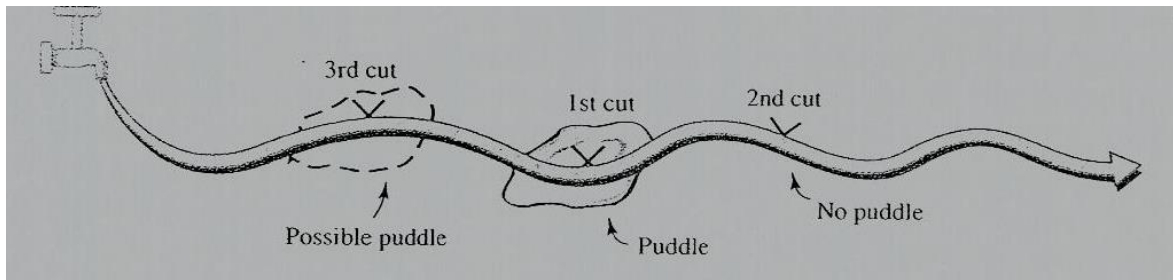


Figura 10-49B: La analogía de la manguera de la figura 10-49 a.

Este método de usar el arco dañado en ambos sistemas eléctricos monofásicos y trifásicos se ha enseñado a más de 1000 investigadores en la Academia Nacional ATF; está basado en cientos de pruebas de cableados eléctricos y componentes en laboratorios e incendios estructurales desde la década de 1980⁵⁶. Los tribunales lo han aceptado y han sido atendidos por la NFPA 921, Cap. 17. La falla del rastreo del arco ha sido verificada como creíble en Norte América (120-V rama principal de distribución) y también en el sistema del Reino Unido (230-V anillo principal de distribución)⁵⁷. Esto ha sido altamente probado en superficies expuestas del cableado a gran escala del compartimento de fuego y se ha señalado como un indicador muy confiable para determinar el origen del incendio.

Punto máximo del origen

Una “tercera dimensión” del origen se puede determinar a la hora de examinar del funcionamiento vertical y horizontal del cableado eléctrico. Por ejemplo, en la figura 10-50, el enchufe de una pared que se alimenta por un circuito derivado está en el interior de una instalación, alimenta un cable que tiene signos de molduras y cortes. Esto indica que el precoz incendio estaba en el cuarto y no en la pared debido a que un incendio interno en la pared desactiva la energía del enchufe, así que, ninguna falla

podría ocurrir en el cable de alimentación. A la inversa si los cortes y molduras se encuentran solamente en cableado que está por encima del techo, esto indicaría que hay un fuego prematuro en el ático y si ambos se encuentran en el techo y en el cableado de alimentación, entonces esto indicaría que el fuego atacó primero el cuarto y continuó hacia el ático antes de que el interruptor del circuito tuviera tiempo de abrirse. Al trazar un diagrama tridimensional que incluya las secciones pertinentes del cableado eléctrico se puede proveer valiosa información para que el investigador elimine toda causa potencial de incendios.

Consideraciones más allá de la falla del arco

El investigador también debe estar consciente de que el arco que esté más lejos de la base puede no ser el origen más cercano; esto a causa de los efectos de la colocación del cableado en relación a otros objetos en la escena del incendio y del daño no eléctrico al cableado causado por el fuego y otras actividades. Algunos de los factores por considerar son irregularidades de protección del cableado contra el fuego por los paneles de yeso, tipos de aislamiento eléctrico, falla de corrientes disponibles, el tamaño de los OCPDs y el número y la ubicación de las fuentes de energía eléctrica.

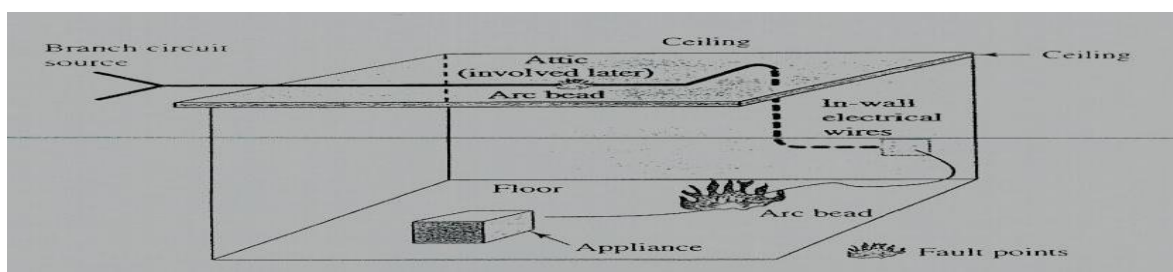


Figura 10-50: La representación del patrón de la falla de un arco en tres dimensiones.

En las estructuras más grandes o de varios pisos donde se ha producido un colapso o una remodelación significativa, a menudo es imposible trazar con precisión que cada

conductor vuelva a su fuente original, lo cual produce que el mapeo de fallas del arco sea de valor mínimo. Un electricista con experiencia en el cableado puede ser de gran ayuda en la consideración de estos factores. Este método también puede ser dependiente de la carga de combustible. Por ejemplo, un pequeño fuego que está empezando en una esquina de una habitación, puede no tener suficiente energía para derretir el aislante que está encima de los conductores; pero, una carga masiva de combustible en la otra esquina de la habitación, podría causar fallas en los conductores de su esquina. En el caso de un colapso de un edificio o de una explosión, el movimiento físico o fractura de los miembros estructurales, conductos eléctricos u otros recintos eléctricos, pueden exponer a los conductores en el interior y producir un arco debido a que el contacto o calentamiento es más rápido que en las áreas donde los conductores están mejor protegidos. Tales eventos pueden resultar en un daño de arco, incluso si están abajo en zonas más protegidas donde están más cerca de la zona de origen.

Algunos puntos de las fallas eléctricas pueden ser modificados por posteriores derretimientos y efectos químicos de algunos incendios. El investigador debería tomar en cuenta esto durante la revisión. Como una guía general, debe haber un área de demarcación entre el derretimiento localizado (supuesto arco) y la zona no dañada del conductor. Las batallas en los tribunales se han centrado si un supuesto punto de moldura es realmente derretimiento térmico debido a los efectos del fuego. Los metalúrgicos con experiencia pueden ser llamados a dar opiniones sobre el origen de la moldura. Como vemos, la discriminación puede ser muy difícil. El impacto de esta

técnica es la ubicación del primer gran incendio; no necesariamente basarse si el incendio fue causado por una falla eléctrica.

La baja temperatura de derretimiento del cable de aluminio limita su uso en este método, ya que se somete a un amplio derretimiento en grandes incendios. Sin embargo, si el derretimiento bruto se contabiliza, este método de análisis de patrón puede ser de utilidad. Finneran ha publicado recientemente una descripción exhaustiva del planteamiento y aplicación⁵⁹.

El origen determinado por la revisión del sistema eléctrico debería correlacionarse con los orígenes determinados por los otros métodos estándar investigativos. Es importante que el investigador de electricidad y el investigador del origen y la causa puedan llegar a un consenso, a un punto de origen antes de que la causa se establezca de manera concluyente. La posibilidad de una causa eléctrica debe ser investigada como parte de la revisión continua.

Arcos producidos por carbono

Frecuentemente las señales de los arcos eléctricos no son de una ignición eléctrica, sino una consecuencia de un incendio. Debido a que la mayoría de los materiales de aislamiento de alambre son combustibles, la formación de arcos es a menudo el resultado de la corriente transmitida a través de aislantes carbonizados o contactos entre los cables, hasta que el aislante se haya consumido por completo. Cuando la condición de los cables indica que el arco ha tomado su lugar, los arcos en realidad podrían haber sido el resultado de un incendio causado por la degradación del aislante (el fuego causado por fallas, arcos carbonizados, algunas veces son llamados arcos

secundarios). Esta formación de arco puede ser entre conductores o conductores energizados y por conductos o estructuras conectadas a tierra.

El arco puede progresar hasta el cable (hacia la fuente de energía en sistemas monofásicos) a cierta distancia, lo que produce efectos exteriores sostenidos y baños de metal fundido, como se ve en la figura 10-32. El arco se puede producir a través de la carbonización y ser sostenida incluso por circuitos que están protegidos por fusibles o interruptores, debido a que la resistencia de la "conexión" puede limitar la corriente de manera que no se produzca una sobre corriente. Los conductores son libres de moverse de un lado a otro (a diferencia de una falla franca), esto significa que el arco puede ser atacado y extinguido numerosas veces en periodos muy cortos para que el OCPD sea activado⁶⁰.

Revisiones microscópicas de conductores y cables dudosos pueden proveer información importante. Las condiciones del derretimiento del calor externo son diferentes a las de los arcos eléctricos. Cuando los cables se derriten debido a la alta conductividad térmica, usualmente hay una pequeña diferencia de temperatura entre las partes que se han derretido y las que no. En esta situación, la sección del cable se ha elevado a la temperatura del fuego y solo se necesitan unos pocos grados adicionales (a partir de un área de calentamiento optimizado) para producir el derretimiento y los síntomas indicados (ver la figura 10-45). Por el contrario, cuando los cables son sometidos a los arcos (si el arco es la causa del incendio o el resultado de este), el propio cable está a una temperatura ambiente mientras que el arco está a miles de grados. El resultado es a menudo un cambio brusco de un cable no dañado a un glóbulo derretido, como se muestra en las figuras 10-47 y 10-48.

Es posible que los granos diminutos de cobre fundido salpicado estén sobre superficies cercanas que no estarán presentes cuando el derretimiento sea causado por un daño térmico por sí solo, sin flujo de corriente. Las dos situaciones diferentes son usualmente discernibles debido a la revisión. La inspección es suficiente para detectar los efectos del arco, pero la ejecución del cable a través de una bola de lana de algodón o incluso entre las yemas de los dedos, puede ser más eficaz en la detección de defectos muy pequeños (siguiente sección). Por supuesto, hay áreas negras donde ambas situaciones ocurrieron y en donde las altas temperaturas dejaron en muy mal estado el cable y destruyeron las indicaciones. La difícil tarea es evaluar cual formación de arco ocurrió primero antes del fuego y por ende creó la fuente de ignición. Hay que recordar que no es suficiente tener la fuente, sino también debe haber combustible en un estado físico adecuado en contacto con la fuente para que haya tiempo suficiente para tener la ignición.

El investigador debe continuar preguntándose “¿Tengo todos los elementos o estoy culpando a la electricidad solo porque hay cables en los alrededores?”

Análisis de laboratorio

Como se describió en el capítulo 14, el laboratorio ayuda a la investigación de muchas maneras, como se menciona, el análisis del cableado, aislantes, interruptores, fusibles, circuitos y aparatos pueden ayudar en la investigación de incendios de posibles causas eléctricas.

Las herramientas y procedimientos del laboratorio

En muchos casos, los diagnósticos de incendios por electricidad son tan delicados que requieren la revisión de un laboratorio. Los cambios ocurren a medida de que el cable de cobre se calienta. Primero la oxidación produce decoloración, segundo cuando la

temperatura está alcanzando el punto de derretimiento, la formación de ampollas y el burbujeo pueden ocurrir de la desgasificación. Durante el derretimiento, las estrías que son causadas por el proceso de fabricación fluyen unidas; hay un flujo general de cobre fundido que da como resultado el boleo y zonas de erosión con una superficie áspera. Cuando los cables están posicionados en forma vertical, el cobre fundido puede bajar en forma de una bola y caer, dejando un extremo puntiagudo. Cuando la bola permanece intacta, una porción que está sobre ella muestra una reducción del diámetro de donde fluía el metal.

No hay una clara demarcación de los puntos derretidos y no derretidos. Los cables trenzados se funden y fluyen de forma unida hasta formar una masa sólida. A veces estas trenzas son discernibles, pero han sido unidas y no pueden ser separadas, a veces estos cables que van por dentro de un mismo conducto se funden juntos. Estos síntomas se ven cuando los cables alcancen su temperatura máxima; usualmente la fusión es localizada debido a que la temperatura del cable de cobre está por encima de las temperaturas del fuego promedio; este calor generalizado es anormal.

Por contraste, usualmente el arco eléctrico no se derrite, erosiona, generaliza la fusión de trenzas u otros síntomas indicativos de la exposición al fuego. Las características del arco eléctrico son la formación de líneas puntiagudas demarcadas entre el área del arco y el cable no fundido, como se muestra en la figura 10-47 y 10-48.

En casos de arcos, los cables entrelazados, a veces exponen individualmente el derretimiento solamente en el punto donde ocurrió el arco, como se muestra en la figura 10-48a. Los análisis elementales de tales puntos por microscopía electrónica/energía dispersiva de espectrometría de rayos X (SEM/EDS), pueden ser de valor al establecer

contacto entre conductores de metales diferentes (como por ejemplo, alambre de cobre contra una caja de de acero galvanizado⁶¹) con una aleación de aluminio, ver la figura 10-51. (Ver el capítulo 14 para las descripciones de tecnología de la SEM/EDS y las aplicaciones a investigaciones de incendios. El SEM puede mejorar la calidad visual permitiendo la revisión de detalles finos, como las “líneas dibujadas” en los conductores que desaparecen cuando se acercan al punto de fundición.)

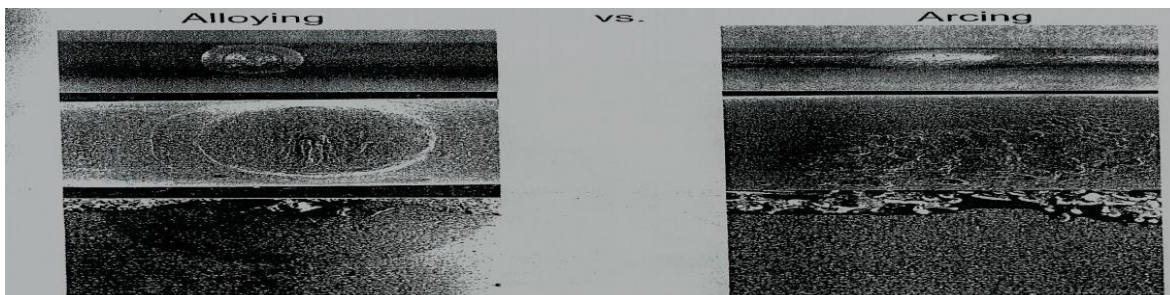


Figura 10-51

Comparación: La comparación de un cable de cobre (calentado), con una aleación de aluminio (en la izquierda) y un cable de cobre expuesto a un arco eléctrico (a la derecha). En la parte superior: Fotos a color. En el centro: un color falso. Mapas elementales SEM/EDS. En la izquierda el verde representa el cobre y el rojo representa el aluminio. En la derecha, el verde representa el cobre y el rojo el oxígeno.

En la parte inferior: Mapas elementales de la metalografía, en la izquierda se ve que el aluminio (rojo) ha penetrado en el cobre tanto como en la superficie. En la derecha, el cobre traspasado está en la superficie con un poco de cobre oxidado debido al calor del arco. Courtesy of Chris W. Korinek, P.E., Synergy Technologies LLC, Cedarburg, WI.

SEM/EDS puede ayudar a confirmar igniciones accidentales del mecanismo. La presencia de contaminantes metálicos en los aislantes de interruptores y series han sido relacionados al seguimiento del arco e incendios de equipos eléctricos. SEM/EDS también puede ayudar a identificar la naturaleza y el origen de tal contaminación.

La metalografía es el estudio de una sección transversal de un metal y muestra detalles tales como granos, impurezas, huecos y otros detalles importantes del material de la historia que ayudan a mostrar si el material estuvo envuelto en un incendio. Algunos ejemplos de metalografía son mostrados en la figura 10-51.

Se ha sugerido que la identificación de compuestos atrapados dentro del cobre, a medida de que se derrite y reacciona con su ambiente, podría permitir que uno concluyentemente establezca si el cobre falló en una atmosfera con oxígeno (al aire abierto) o por cloro (aislamiento de cloruro de vinilo). De hecho, las pruebas de doble ciego de la espectroscopia de electrones de Auger (AES) es un método que ha concluido que la técnica no discrimina entre las perlas creadas durante el incendio y aquellas que iniciaron el incendio⁶². En una exhaustiva investigación del AES, Babrauskas concluyó que tal discriminación era poco probable debido a que los dos procesos de electricidad y fuego no producen categóricamente diferentes residuos. Debido a que la mayoría de los incendios posteriores son la suma de los efectos del fuego y los ambientes en un incendio son tan complicados, no parecería que ninguno de los procedimientos metalúrgicos o instrumentales analizados hasta la fecha puedan diferenciar entre los residuos de gránulos de cobre como parte del proceso de ignición y aquellos que se crearon en el incendio después por la exposición térmica.

Cableado y cajas

El calentamiento por conducción (debido al exceso de corriente que pasa por un conductor de tamaño indebido) calienta todo el cable hacia la caja o hacia la fuente de suplementos.

El calor excesivo puede causar que los cables alcancen una temperatura de fusión y cuando se derrita la primer parte se puede formar parte de un arco. Si el aislante se destruye primero, los residuos carbonizados pueden crear una vía de conducción o los cables descubiertos pueden llegar a hacer contacto entre ellos y crear un arco.

Cuando estas cosas suceden dentro de conductos o cajas de metal, las fallas usualmente se descubren y conllevan un poco de preocupación. Sin embargo si una falla tiene suficiente energía para hacer un hueco en el metal, un incendio puede ocurrir (tales penetraciones son poco frecuentes con una protección de circuitos 120/240-V). La figura 10-52 muestra la falla de un medidor de conexión de servicio que estaba flojo y triturado contra la base del medidor. Usualmente las revisiones de una zona del cable no quemado provee información útil e indicar la edad y el estado del cable. Si se ha mantenido en un mal estado o si el aislante esta agrietado o quebrado, los problemas eléctricos deberían ser más propensos.



Figura 10-52: Cuando el cable de alimentación se desprendió y cortó dentro de la caja, se formó un arco en la caja del medidor.

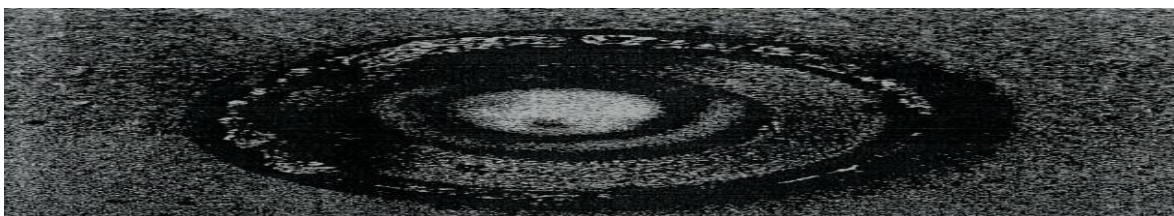


Figura 10-53 A: Lado inferior de la cabeza de un tornillo de acero después de una conexión. incandescente que fue recreada en un laboratorio en una salida doble con un alambre sólido número 12 AWG. Note que hay una fusión y decoloración en el borde de la cabeza del tornillo.



Figura 10- 53B: Comparación

Comparación de un alambre y una rosca de normal a una conexión (ajustada) y de un tornillo y alambre oxidado y dañado a una conexión baja a una de (alta resistencia).

Si la sección del cable no dañado está en el área sospechosa y si el suplemento se encuentra; la condición del conductor puede proveer información muy útil. Si el aislante y cable están “como nuevos” sin deterioro, es poco probable que la sobrecorriente haya ocurrido al grado de que la ignición se diera.

Ya sea por el arco eléctrico o a través del carbón con sus efectos del calentamiento local, podrían ser posibles bajo estas condiciones. Aunque las fallas ocurran donde el conductor no era continuo (provoca series de arcos) estas conexiones son las fallas más comunes.

Conectores de tornillo

Los tornillos muestran efectos extensivos de calor, lo que incluye transferencias de arco en el borde del tornillo, como se muestra en la figura 10-53a y b. El calor prolongado en una mala conexión puede causar fuego a lo largo del tornillo. Cuando un tornillo se

expone al calor externo, parte del conector va estar protegido a menos de que el fuego sea muy prolongado. Un calor localizado similar puede ocurrir en cualquier conector que sea usado inapropiadamente, en tuercas para alambre, cables entrelazados, “**racor**” conectores en toma corrientes o unidos a enchufes. La figura 10-54 muestra el calor y la erosión de un conector suelto de un perno encendido por la madera adyacente.

Aislantes

Los cables que eran muy antiguos normalmente eran aislados con hule o con material textil. Los aislantes modernos para cables son termostáticos (polietileno o PVC como material más común). Las condiciones de los aislantes a veces pueden ser usadas como guías para indicar si el calor fue interno o externo. Cuando la corriente pasa a través del cable cubierto de hule, el calor interno puede destruir el hule del cable dejando el exterior casi intacto. Después, el aislante puede quedar libre para deslizarse hacia atrás y adelante sobre el cable (efecto de unión).

Esta situación es diferente con el plástico aislante que es más común en estos días. En un cable sobrecalentado, el aislante se vuelve más suave y se derrite. Debido a su inercia térmica, el plástico se decolora en la superficie que se expuso al calor; esto puede revelar si el aislante se calentó desde adentro (calor del cable) o desde afuera (calor del exterior). Sin embargo cualquier calor es generalmente acompañado de deformación, hundimientos y decoloración del aislante⁶⁴. A veces el burbujear ocurre de la formación del gas a medida de que el plástico se descompone por medio del calor.



Figura 10-54: Cierre de un conector de tornillo, muestra la erosión y el arco por sujetar.

El burbujear no es notable en aislantes de hule debido a su porosidad y a que este minimiza la entrada de los gases. Cuando hay duda, el laboratorio puede revisar una parte del cable no dañado con solo pasar una corriente a través de él y observar los efectos del aislante. Hay que recordar que el calor del cable no es necesariamente eléctrico. El calor puede ser resultado de un conductor térmico de un cable expuesto directamente a una llama que está lejos.

Revisión de interruptores, fusibles y otros aparatos

En el capítulo 14 se va discutir la revisión de interruptores, fusibles y otros aparatos. Las radiografías son valiosas en la revisión porque pueden revelar detalles internos sin tener la necesidad de desarmar⁶⁵. Incluso el calor más pequeño podría derretir, quemar o carbonizar un aparato eléctrico mas allá de la revisión (ver las figuras 10-55 a y b), algunas veces en el análisis se encontrará otros problemas aparte de fallas eléctricas. Las entrevistas a personas con estos aparatos ayudan mucho con las investigaciones y sugieren hipótesis muy probables. La aspiradora en la figura 10-56 fue la causa del incendio, pero fue desconectada a la hora del incendio. Había sido usada 5 horas antes para limpiar una cantidad de polvo relacionada al proyecto. El laboratorio confirmó que el polvo del piso de madera era susceptible a calentarse solo.

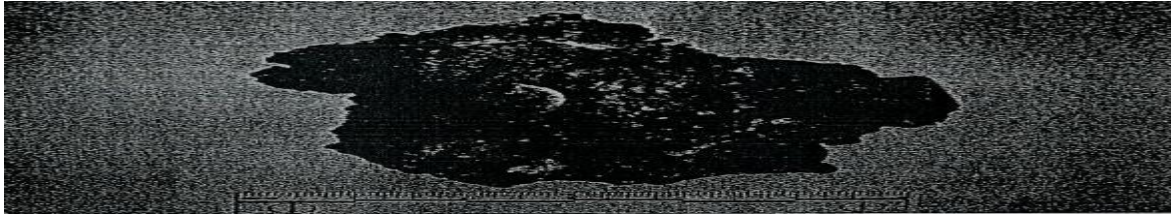


Figura 10-55 A: Un detector humo quemado que es difícil de evaluar. Courtesy of Jhon D. DeHaan.

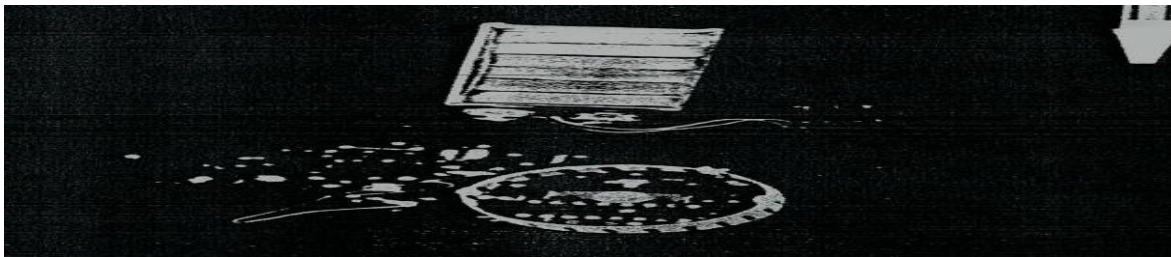


Figura 10-55 B: Los rayos X muestran las conexiones de la batería en su lugar. Courtesy of Dr. David Icove, University of Tennessee.



Figura 10-56: Una aspiradora fue la causa de un incendio en un armario, pero una revisión demostró que no estaba conectada a la hora del incendio. Los análisis del laboratorio confirmaron que la bolsa (que estaba destruida completamente) contenía polvo de piso lijado. El polvo lijado auto calentó la aspiradora y la encendió. Courtesy of Investigator Jeff Weber, San José, CA, Fire Dept.

Resumen

Si los cables, electrodomésticos u otros aparatos eléctricos no han sido muy dañados por el fuego, se puede recopilar la suficiente información para hacer la revisión con el previo resumen. La revisión de las causas de incendios eléctricos incluye el cómo se produjo el calor necesario, calor por fallas o por el flujo de corriente no deseada. Además el análisis debe incluir la cantidad de calor producido, la velocidad a la que se propagó, la

zona donde se produjo, el efecto del calor sobre el primer combustible y los mecanismos de la ignición. Como en otros campos, los investigadores han juzgado cierta evidencia de los síntomas de incendios producidos por la electricidad; sin embargo, no es muy confiable.

Esto incluye:

La ignición debido a fusibles o interruptores ligeramente más grandes

Cuando un fusible o interruptor es más grande que la capacidad del cable, probablemente esto no es lo que inició el fuego ya que hay gran capacidad para que la corriente fluya.

Los extremos de los cables

Esta condición puede dar como resultado tanto el derretimiento por el fuego como un arco eléctrico; pero ninguno de los dos tiene que ver con cómo se inició el incendio.

Aislamiento de los cables sueltos

Si el aislante se suelta, es probable que sea por la sobrecorriente. Si no está suelto, la sobrecorriente no debería descartarse. El tipo de aislante se debería probar para determinar sus características térmicas.

Los circuitos abiertos causan incendios

Debe haber un flujo de corriente para que ocurra una ignición. Un solo voltaje en un cable energizado no causará ningún incendio, debe haber un flujo de corriente de amperios. Esta corriente debe hacer cortos circuitos, sobrecargarse, haber fugas en la corriente, degradación de los aislantes y demás. Sin embargo los conductores energizados pueden provocar efectos eléctricos durante los incendios.

Arcos, causa o resultado

¿Provocó el arco el incendio? O ¿Fue el arco el resultado de que los cables se tocaran debido a que el aislante se quemó por el incendio? ¿Podría encender un arco los materiales que estén cerca? ¿Hubo alguna exposición al fuego que pudiera causar un arco a través del carbón?

Energía

¿Había suficiente energía eléctrica que pudiera causar que se incendiaran materiales alrededor? La presencia de un poco de electricidad no es suficiente prueba de que encendiera los combustibles. Los eventos eléctricos deben ser incluidos en un esquema de hipótesis que pruebe que hubo un poco de energía. Esta prueba recuerda la pregunta ¿Pudo haber causado esta fuente que se encendiera el combustible bajo las condiciones presentes?

Hay que recordar, como con otras formas de evidencia física, la posibilidad de que hubiera demasiado daño para preludiar el análisis decisivo. Incluso con un laboratorio, con muchos cuidados, las revisiones fallan al revelar la causa o mecanismo del incendio y no debería haber motivo para inventar el origen eléctrico.

Preguntas de repaso

- 1- Describa la ley de Ohm y mencione su fórmula básica
- 2- ¿Cómo una mala conexión puede provocar un incendio?
- 3- ¿Cómo un fusible puede funcionar como un dispositivo de protección de sobre corriente?

4- ¿Cómo una corriente eléctrica puede causar un incendio cuando está protegida por un OCPD?

5- ¿Qué es el seguimiento arco y cómo contribuye a una ignición?

6- ¿Cómo el mapeo de arcos ayuda en la determinación del área de origen?

7- Nombre 3 tipos de combustibles que se enciendan por la descarga de electricidad estática.

8-¿Pueden diferenciarse los gránulos de un arco en un cable de cobre de aquellos que fueron parte de la causa del incendio?

9-¿Cómo el cableado de aluminio difiere con el de cobre en su conducción, propiedades mecánicas y punto de derretimiento?

10- De 3 ejemplos de cómo los motores eléctricos causan incendios.

4.2 Translation from Spanish into English

The Practical Side of Singleness

After being single for 40 years, I can tell you that I have dealt with every existent demon. It is very uncomfortable when you are not married, and people start suspecting the life you lead. You start asking yourself: Is there something wrong with me? Am I too perfectionist? Why don't I like people back? Why I cannot commit? People have every type of psychoanalytic approaches and many of them want to play match maker and ask you why you are not married. You begin to feel uncomfortable because you are not married, but you are not defined by people but by God.

I want to speak about the survival mechanisms, modifications of behavior, and management of pain because that is what life is all about. Before getting married, all perspective of my life was on my destiny, where I would go, and what I was going to do with my life. After I got married and had my children, I began to focus on my legacy what I was going to leave behind me. Destiny is what is in front of you, and legacy is what is left behind.

Living and thinking with precision and decision to be the best I can be. Not to be somebody who looks for approval because we are very oriented to performance. Being who I am because God made me, and I need to open my mind to find out what I needed from him. Getting older is inevitable but growing up is optional.

1 Corinthians 7:1

7 Now concerning the things whereof ye wrote unto me: It is good for a man not to touch a woman.

1 Corinthians 7:1 Amplified Bible (AMP)

7 Now as to the matters of which you wrote: It is good (beneficial, advantageous) for a man not to touch a woman [outside marriage].

Many people have used this scripture to base their singlehood on. You have to understand that many of the things Peter said here was a time where he was waiting for Jesus Christ to come to the earth for a second time. Thus, many of the things he said were urgent matters based on he was waiting for the Lord to come any day. He felt the urgency of passing that message on, but that was 2000 years ago. That scripture seems to be the

opposite of what Genesis says that is not good for man to be alone. It means that is not good for man to be alone, single, or different to other species. There was a male dog and a female dog; same for horses and monkeys but there was only one male man and not a female man.

A woman is a female and man is male. The man is the one who gives and the woman receives, and they are not opposite sex; they are the corresponding sex because God made the woman corresponding to the man and the man corresponding to the woman.

Adam was unique for a while and God said it was neither good, pretty, beautiful nor pleasurable that the man had no partner thus he was going to make a helper that was appropriate for him. There is a helper for each of us to whom we will get married. Some of you have gone through that three or four times, but we hope you can get a lesson so you can learn to have lasting relationships.

We must love others as we love ourselves; you will not love your neighbor the correct way, if you do not do it yourselves the correct way. Many of us do not love each other the correct way; especially, the religious people who tend to be the worst people you will ever know. They are bad because they are mad trying to do something or being someone that God does not even require from us.

Adam fell in love with Eve; they worked, and walked together, and they became one. So there is certain singleness in marriage thus as certain singleness in singleness. It does not sound right. The man wants woman who can be a lover, friend, and somebody matriarchal while the woman wants a lover, friend, brother, and father figure. We want that

all mixed. If a man acts like a child, he forces her to act like her mother. The woman tends to be matriarchal.

The word of God says clearly that one of the things that were going to happen as the woman being the center of the original sin was that her pain, agony and rage were going to increase in maternity and with pain, rage, and agony, she was going to give birth. The tendency of the woman is to fix things and see they are ok, but the man is trying to control. Here is where the problems come because both of them are trying to control and when the man feels pain, he feels that his control is already being taken out.

The man waits that his woman gives him a happy place as his mother did. If she does not do it, he will not probably say anything, but he will tend to be depressed, silent, and distant. Many men do not admit that when becoming so dependent of her mother, they subconsciously think: "I will never need a woman this way in my life" and we try to take this in our relationship. Once I had to apologize to my wife because I refused to need her. We were arguing intensively and I remember I told her "sweaty, I do not feel confident when you do that" and she told me "I have never heard you saying that" and I remembered that I was saying to myself that I did not want her to listen to that.

We tend to fight our singleness because we all have a painful past and there is something in that past that paralyzes our present which in turn may paralyze our future. The word of God says that it is good for man to avoid sexual intercourse with a woman, but as there is so much immorality and fornication in the mundane world, each man should have a wife and each wife should have a man. The man must do his marital duty and it works the same for women.

The body of woman does not only belong to her but to her husband and the body of the man does not belong to him but to her. There is a certain feel of possession. They do not have to forget themselves although there is mutual agreement of devoting time to praying; then you will have to return to your spouse to keep the devil from taking advantage of your lack of control. This clearly says that the devil is going to tempt Christians even if they are married. There are spirits that you confront when you are married but not when you are single. You experiment certain feelings and thoughts. I remember what my dad once told me “Son, only because you get married does not mean you are going to see all other women ugly or less attractive”.

A real crisis is a crisis of confidence. When you learn the truth about yourself or when you do not even know it yet, your level of confidence is going to decrease. The word crisis comes from Greek and means decision. When there is an alteration in the function of the level of truth or the things that you are certain about, there is an alteration in the function of confidence. Relationships can be like wild and ferocious beasts; they throw, trample, and pass over you. We must learn to approach a relationship carefully to guide it without being thrown away or destroyed. That is what you want when you get married. When Peter advises to stay single, we can assume that once he was married. He knew something about marriage and that his days were numbered, so he discourages people not to get married and this is not because he thinks marriage is wrong but because it is a distraction.

When you enter matrimony, you face challenges you did not have when you were single. I want you to prepare your spirit and look deep down and find what is not working correctly in your life. Deal with that right now because otherwise, it will be more difficult

when you get married. Look inside of you today. The emotion is the power that attracts. Anything that you are afraid of, someday you will have to face and experiment it. Same happens with what you wish; that is what you are going to attract into your life. How do you deal with your emotions and feelings?

Perception is the final fact, but not necessarily the final truth. You will always bow down to the dominant images that you allow into your mind. You must choose or create images you can domain. Images are like magnets; they attract you. If you think you are a victim that is what you are going to be. If you entertain the notion that somebody is doing something to you, you weaken yourself to do something about it because you cannot control anyone else; you can only control yourself. When I separate myself from whom I really am, and I see how God consecrated me, I will cling to that, and I will be able to deal with anything in this world. However, if I leave other people's opinions define me, I will never know who really I am. We spend our entire lives pretending to be the person who others want us to be, and in the process we lose the person who we really are.

Many of us have no clue of who we are. Moreover, God is correcting some things inside us so we can have a notion of who we are in reality. Thoughts become purposes, purposes become actions, actions become habits, our habits influence our temper and our temper influences our destiny. Thoughts are powerful, thus, as the heart of a Christian thinks that is the way they will think of themselves.

We must learn to distinguish between the creations of God and our illusions. We have to know God in a complete way instead of a selective way. Miracles are examples of correct thoughts. Thoughts are powerful, creative, and almost made up; miracles are correct

thoughts; it is aligning of a life with the truth as God created not as you have designed it. A miracle is a correction inserted in a false and inappropriate thought.

We must align our thoughts. We have to ask God to heal our perceptions until the knowledge of the Divine one be possible. We must ask God to help us by the Holy Spirit for us to perceive and recognize the universal mark of him in the whole humanity in order to get rid of the lack of perception or isolation. I am the justice of God in Jesus Christ, and I can do all things. Only because you have sin, it does not mean you are sin itself. Christians are not free of sin, but they sin less. Christians sin; nevertheless, they do not practice sin.

When people come to God, religion, or counseling, we can say they usually come with a problem to be presented. A presented problem means the worry you think is your main source of discomfort, illness, or pain. Most of the times, what you think is your problem might be not your main source of difficulty. The problem that you present is a sign of a deeper wound. If you are presenting to God the difficulties in a relationship probably this is based on a past wound that is stored in your memory. If somebody told you all through your childhood that you had flat feet, crooked nose, wide hips, or that you are very shy or slow, you will deal with all those thoughts all your life.

For example, your view is on your hips; nevertheless, nobody is looking at your hips; only you. If you think that your hips, ears, or nose are out of place, you will carry those burdens, and you will create an image of who you are not and that perception hurts you because that is an spirit of anorexia or bulimia to mention just two. You are trying to fit in someone who you are not to get the approval of somebody else. You must be yourself but first of all you need to know who you are. If you try to solve the present conflict

without healing your past wounds, the only thing you are going to do is to find a temporary relief; a treatment with no cure and you are going to medicate yourself to death.

In the quest of the purpose of life there is a moment of definition. The word define means strength; the final line. There is that moment where you realize how much you can be stretched out. In the quest of the purpose of life, there is the key moment in the redefinition of the crisis where you become free of a confined limitation and this gives power to enter into something wonderful. In other words, what I thought it was going to kill me, it gave me life. What I thought it was going to decrease me, it increased me. What I thought it was going to stray me out of my way, brought me over. What I thought it was going to knock me down, made me stand. Anything you think that is going to destroy you, that is the thing is going to take you to the next level. What you thought you had lost; that is exactly what you needed to lose to find what God truly had called you to do. The destiny has to do with decisions not luck. You must choose your destiny and not play with it. You must let God to lead and guide you.

Maybe you are dealing with unusual orientation, strange preferences, or going through an identity crisis. Maybe you are mad at your failed relationships; you do not like the opposite sex because you think they manipulate you. It may be that you gave up your soul and mind. First of all, I want you to relinquish this kind of thinking now. I want you to leave all those old clothes. If you are dealing with flesh temptations, you must submit that to the Lord. You must love yourself if you want somebody else to love you; you also have to forgive your past.

10 Signs of Financial Problems

Dear friend, in this book God will show you 10 signs that will help you identify if you have financial problems and what is going on in your financial life; therefore, so you can have freedom and an unlimited victory in Jesus Christ.

First Sign: We can realize that we have problems when we have unpaid bills, water, power, and phone get cut off, and when there are bills we cannot pay.

Deuteronomy 28:1[verse 1 to 8]

“¹And it shall come to pass, if thou shalt hearken diligently unto the voice of the LORD thy God, to observe and to do all his commandments which I command thee this day, that the LORD thy God will set thee on high above all nations of the earth.² And all these blessings shall come on thee, and overtake thee, if thou shalt hearken unto the voice of the LORD thy God.³ Blessed shalt thou be in the city, and blessed shalt thou be in the field.⁴ Blessed shall be the fruit of thy body, and the fruit of thy ground, and the fruit of thy cattle, the increase of thy kine, and the flocks of thy sheep.⁵ Blessed shall be thy basket and thy store.⁶ Blessed shalt thou be when thou comest in, and blessed shalt thou be when thou goest out.⁷ The LORD shall cause thine enemies that rise up against thee to be smitten before thy face: they shall come out against thee one way, and flee before thee seven ways.⁸ The LORD shall command the blessing upon thee in thy storehouses, and in all that thou settest thine hand unto; and he shall bless thee in the land which the LORD thy God giveth thee.”

Running water, power and phone are blessings we should be enjoying. However, if the services are cut off, this is the first sign which shows that you are dealing with financial problems. In this first level, if you know that in one month a service will be cut off, next

month you are ok, but if the service is cut off again, there is clear evidence that shows a financial problem, and this is a modern life curse that God will break.

Deuteronomy 28:15 [verse 15 to 19]

¹⁵ But it shall come to pass, if thou wilt not hearken unto the voice of the LORD thy God, to observe to do all his commandments and his statutes which I command thee this day; that all these curses shall come upon thee, and overtake thee: ¹⁶ Cursed shalt thou be in the city, and cursed shalt thou be in the field. ¹⁷ Cursed shall be thy basket and thy store. ¹⁸ Cursed shall be the fruit of thy body, and the fruit of thy land, the increase of thy kine, and the flocks of thy sheep. ¹⁹ Cursed shalt thou be when thou comest in, and cursed shalt thou be when thou goest out.

Second Sign

When you get to this level, you are not capable of paying your monthly bills. Furthermore, a new concept is added small unpaid bills. Perhaps now you realize that you cannot pay those great amounts of small debts, and a friend comes up with the idea of getting a loan to pay all those small debts over a longer period of time and smaller monthly fee. At first glance, this seems to be a great solution for this problem; however, that is a lie from the very devil because your debts and everything within your economical life has to do with the spiritual realm.

Many times we have believed that praying, having faith, or fasting are spiritual but we do not realize that financial matters are spiritual too. Not by accident, 18 of 36 Bible parables speak about financial matters; for example, 288 times in the New Testament and 2,200 times in the whole Bible while faith is mentioned around 800 and praying about 650

times. By this, I do not want to say that one thing is more spiritual than the other, but I believe that it is important for us to understand the willingness of God in our lives. Now, if you are in this second level, and you already have the bank loan thinking that it was a good idea, take a look at what the Bible says:

Proverbs 20:7

“The just man walketh in his integrity: his children are blessed after him.”

This matter of financial problems is absolutely spiritual. It is important that you provide your children with a free life. You must be a person with a purpose, full of love, a saint with a mind focused on the great plans of God, full of a unique passion that remains strong, a person at one glance which can be like an abundant river and not like simple water that flows through countless streams and gets divided as soon as a tree falls and changes its course; you must be like a strong and abundant river which remains whole and continues unchanged. The same happens when you are facing problems; it depends on your purpose and passion to keep moving forward.

The solution is not getting entangled anymore. If you are at this second level, you will need more money because you have gotten in a debt since the huge loan you have signed, but as we have explained, this is a spiritual matter. So inevitably you will get in debt again. Repent where you are and ask God to forgive you for those actions that are away of his willingness, so you can enjoy from now the financial freedom.

Third Sign

At his level the economic pressure cannot be taken anymore. You begin to ask your family for loans; you look for somebody who has saved money, demurred, taken by spends, and you start identifying the people who has the custom of having a moderated life.

Proverbs 19:19

¹⁹ A man of great wrath shall suffer punishment: for if thou deliver him, yet thou must do it again.

If you are a family member who is being asked for borrowed money and you think in your heart: I am going to help my father-in-law, sister-in-law, cousin, my best friend, son-in-law or daughter-in-law. You must understand that if you help today, you will have to do it tomorrow because what God says about this attitude is that you should not lent them money. That person needs a miracle; to find Jesus Christ; otherwise, they will come back asking for money again. Similarly, if you are the person who is borrowing money, you will continue doing it; for example, today to your mother-in-law, tomorrow to your brother-in-law and the day after tomorrow to your son etc. Without a doubt, you are in the third level of financial problems. At this point, you cannot save money; you promote spending, and the savings are low-spirited and you live only on credit. When you are in crisis, you will try to find people who save money and who can be better than a family member or a friend that solves your financial issues?

Fourth Sign

When you are at this level, you make hasty decisions and you do not have the patience to look for the willingness of God in the area of stewardship. There is no consistency because you are looking for temporary solutions to be rich overnight.

Proverbs 21:5

⁵*The thoughts of the diligent tend only to plenteousness; but of every one that is hasty only to want.*

Diligent projects are an advantage. In this fourth level you make hasty decisions. The economic pressure is so hard that there is no time for waiting, projecting and praying to God for our dreams and goals to be completed. Now in this level everything is done in a rush and you look for somebody with money. Who has money? It does not matter if the person is a believer or not what matters is to have the problem solved, and you think you have a great idea that will take you out of poverty. Those are lies from the devil. You have so much pressure that what you need is a fast solution to get out of the problem fast.

You have gone through the first three levels, monthly services have been cut off, you are ok today but you do not know about tomorrow; you already have all your small debts in a big banking loan, and the bank is not going to lend you more money because you have a loan to pay for; other small debts show up again, and your family members do not lend you more because if they do it once, they will have to do it twice and triple because you have not changed and you do not realize that this is a spiritual matter. When you are at this level, you are an impatient and anxious person that you do everything without thinking first.

When reading again Proverbs 21:5, you will realize that when you are prudent, the diligence is not something quick yet projection, power, consistence and patience. But if you do everything in a hurry, no matter what you do, you will think crazily in buying and selling to the one who comes faster. In that moment, you will face the path of poverty.

Proverbs 13:18

¹⁸ Poverty and shame shall be to him that refuseth instruction: but he that regardeth reproof shall be honoured.

When we listen to the word of God and let Him reproach us, the Lord will certainly honor us. It is necessary to study the financial principals of God. In every church and family there must be regular teachings about biblical finances.

This fourth level of haste also leads us to the bail path because it encourages us to loOk for projects which require guarantors in credits.

Proverbs 17:18

¹⁸ A man void of understanding striketh hands, and becometh surety in the presence of his friend.

The man who lacks of understanding is compromised. Friends when we get into bails, we can lose everything. If you are looking for a guarantor, please be responsible and careful of not taking a hasty decision. Otherwise, if you are the guarantor of a person that has financial problems, make sure of counting on enough money to pay all debt just in case the borrower does not.

If you are in a really good financial situation, you can do it because if the borrower stops paying the debt, your familiar situation or your seized income will not change at all. If you really have enough money to sell all your properties to deal with the debt of other person, do not worry. However, if that is not your condition, you lack of understanding. Your children must not eat less because you have your income seized; your wife does not

have to restrict her household chores because you have less income. At this level you are man with lack of understanding, and you are asking for bails to perform wrong decisions.

James 4:13-15

¹³ Go to now, ye that say, To day or to morrow we will go into such a city, and continue there a year, and buy and sell, and get gain:¹⁴ Whereas ye know not what shall be on the morrow. For what is your life? It is even a vapour, that appeareth for a little time, and then vanisheth away.¹⁵ For that ye ought to say, If the Lord will, we shall live, and do this, or that.

Look, today and tomorrow we will go to the city, make business, and have profit; everyone thinks same way the man does. Nevertheless, the word of God tells us that we do not know how our lives will be tomorrow; if they will be good or bad. The Bible recommends us to say: “*If the Lord will, we shall live, and do this, or that*” this urges us to give a place to God related to the debt. This is a principal of God.

When is recommended to borrow? When you count on secure means or have properties that respond for the debt. The property does not have to be your home which never has to be used as a warranty. In this way your life will not suffer any change in case of some lose. There are three things that can ruin your life:

Power

Some people are dictators, megalomaniacs, and egocentrics. You fall into frustration because you cannot find the money you need, and you try to show that you have wealth with money you do not have; also with cars and houses you owe, and you are in the process

of judicial collection. It is better to request for a loan and have a house through the end of the year than having bills of rental payment. When you are at this level of making hasty decisions, you want to demonstrate something that people can see. You always think that you are right in everything and that you have the greatest and biggest ideas.

Sex

You fall into a sex problem in which you go into anguish looking for a way out; finally, you get into adultery, fornication and others.

Greed

The unhealthy search of money and bad habits in the management of finances are the main cause of your current economic situation. How is your economic situation right now? What are those habits? Do you have the habit of saving and investing money? Perhaps the only habit you have is spending. Every person that lives over the level of poverty or extreme poverty must save and invest; however, many times we only know the term of spending which lead us to economic problems.

Proverbs 10:4

⁴ *He becometh poor that dealeth with a slack hand: but the hand of the diligent maketh rich.*

Look at what this proverb says; the poor works with careless hands. You can work a lot, but as the Bible mentions in the book of Haggai, the people of Israel worked and all went to waste. Many people say, by my hands many houses, cars, properties, and millions of money have passed and that is the real poor. The poor is not the one who has less

economic resources. To God is not impossible to give great amounts of money and as steward begins to rule.

In these times, God is looking for kings and people like princes to put them in strategic places for the coming of the Lord, also they must be good stewards from now on, not those who are really disorganized in their lives because God chooses from the chosen ones. If you are reading this word today is because God wants you to go into a transformation process and make a miracle in your life. No matter your circumstances and where you were born, what matters is your behavior. It does not matter if you were born in richness. You are not going to be poor because you were born in poverty; the Bible does not say they are the real poor people; it is the society who has been tricking and saying that the level of treasures is going to be measured by all things you have accumulated. God has everything for you. The real poor is the one who works with careless hands and cannot budget, organize and plan; however, the hands of the diligent enrich. If you are a diligent person, God is going to enrich you. If you earn \$20,000.00 in a year, you should spend and have consumption habits of that amount within the year where you will be spending, investing and saving money.

To change your habits, you should change your financial situation, but nowadays the huge problem is that people change their consumption habits, but their financial situation keeps the same. How are we going to have a balanced, prospered, and good life in front of God? The only way to change your consumption, life, clothes, habits etc. is when you make the decision of changing radically your financial situation.

I admire deeply the people who changes for good and keep living with same modesty than before; nevertheless, there are people who change their habits and their financial situation remains the same or even worse. I advise you to learn about finances of God, be creative, look for prospered and honest people, follow their example, look for guidance, also search for people that have made their future with honesty and invest some quantity of money to have lunch and coffee with them. Invest time and money with people who can bring something positive to your life. Give some time to that and decide to build up a solid economic future for your family than just sitting in front of the TV to waste your time. Look for some neighbors that have been honest and hard workers, and ask the how was the beginning. All those people have a story that will motivate and leave you a great lesson.

God feeds the bird, but this one must go and look for it because that feed does not drop to the nest. If you do not go for the triumph and success, it will be really hard they go in your hands. Let other people to have insignificant lives, but you do not; let others to abandon their future in hands of others, but you do not.

Fifth Sign

When people are at this fifth level, they rush up to buy a house or a property; maybe it is not the right time, and they are not organized in their economic, familiar, and conjugal life. Most of the times people buy a house only when they get married. Only few single people think of buying house or they buy it out of their budget, thus getting in trouble.

Proverbs 24:27

²⁷ Prepare thy work without, and make it fit for thyself in the field; and afterwards build thine house.

It is important to stress that first we need to organize our outside duties; this means, our financial income and work stability. If you are not stable or ready for the outside, it means you are not ready to buy a house. Many times people motivate us to buy a house and you say: I am about to have it and God will have to deal with it and buy it.

My dear friend, the advice of God is vast. Do not keep only with one part because from your job, you have to get ready to have your house. I advise you to give only 35% to the hypothec of your house, no more. If it goes over the 35%, do not buy it because generally to buy a house represents a 10% of your income to keep it. If you decide to buy a house of \$100,000.00, you must know that \$1,000.000 will go for water, light, and telephone service plus the roofs, repair works etc.

There are people who buy a house because they like it and because at that moment it was a great opportunity but their outside duties were not organized, so in a short while, the house began to ruin because keeping it was impossible and that was because their outside duties were not ready.

Sixth Sign

In addition to living the levels first and fifth, you still want to have a beautiful house, new car, large properties, and fame so people can get closer to you and you can get some money from them; those the ones who have a system of saving money and which are easy to identify; for instance, members of the church, elderly and widows. In front of them,

you present yourself as a wise man, business man, professional, and you tell them you are going to duplicate their money but deep inside you know that you want to take it out.

At this level you live through the financial leverage which means you pick a debt to finance your life, this means that out of each \$10.00 you earn, you owe \$9.00. You try to buy this article that costs ten dollars you do not have. Of course, you stop offering because you have to sacrifice the part of God since money is no longer enough.

You never have to sacrifice the part of God because everything is from the Lord, and you have to be a good steward in that area. Also you do not have to sacrifice the part the lenders. Do not give a bad image to the lenders even if it is difficult to pay, do it with happiness because if you give a bad image, you are giving a bad testimony of Jesus Christ in your life. Keep saving if you want to get rid of the financial leverage. The Lord says that any person who lives in poverty can and must save money. If you want to be in the list of wise people of God, you should be a person who practices saving to have a full house.

There is no worse thing that going into house where you can smell poverty; a deficiency. In the food pantry there is always nothing, there are broken things, things dirty, and poverty feels all over around. There is not the dew of God as the word says; there is only a dew of destruction and poverty.

Proverbs 21:20

²⁰ There is treasure to be desired and oil in the dwelling of the wise; but a foolish man spendeth it up.

If you want to be like these wise men of the word of God, you have be a person who saves money. The oil is synonym of saving, blessing, desired treasure, and there is always oil in the house of the wise. The foolish man spendeths it up and the proverbs keeps saying that the man who wins today and tomorrow does not have anything. He does not think in having food and nice things at home such as a new napkin holder and not a broken one, four same food dishes and not four with corners broken and one is ovate and the other circular or one glass which says the name of a beer or soda. Why can you not have four same glasses? You are a son of God, and the precious treasure is in the house of the wise. There are not even small cockroaches at your house. So get out of this level of life and start fighting with the excellence of Jesus Christ.

Seventh Sign

Here we look at two things. The person is looking for somebody who can help him in his chaotic economic life. It does not matter if the man is evil, dirty in business, economy, mind, or moral.

Jeremiah 17:5-6

⁵ *Thus saith the LORD; Cursed be the man that trusteth in man, and maketh flesh his arm, and whose heart departeth from the LORD.*

⁶ *For he shall be like the heath in the desert, and shall not see when good cometh; but shall inhabit the parched places in the wilderness, in a salt land and not inhabited.*

Look closely at this verse; *maketh flesh his arm*. This means you give total trust and you sign up anything for money no matter what comes after. Cursed be the man said the

Lord. At this level your heart is separated from God and you are looking anybody who has money, and you are going to make any business even if you have to sell liquor in a bar. Here you are desperate; your wife is sad and anguished. Problems begin such as divorces, separations, difficulties to bear with problems, family pressures, and your wife is advised to leave you because you are not a son of God, and you are involved with people who do not know the Lord and make dishonest practices. Nobody gets married to lose the marriage, but the lack of biblical principals leads them to that path.

Jeremiah 17:7-8

⁷ Blessed is the man that trusteth in the LORD, and whose hope the LORD is.

⁸ For he shall be as a tree planted by the waters, and that spreadeth out her roots by the river, and shall not see when heat cometh, but her leaf shall be green; and shall not be careful in the year of drought, neither shall cease from yielding fruit.

Look at this, blessed is the man who trusted in the Lord and cursed is the man who trusted in man. If you are at this seventh level, you cannot keep following that man who makes practices that does not like to God. When you trust God you are going to be blessed like “a tree planted by the water that sends out its roots by the stream. It does not fear when heat comes; its leaves are always green. It has no worries in a year of drought and never fails to bear fruit.” You can say; I cannot because I am in great need. In that moment you have to trust the Lord. It is in the drought when you are going to remain green. When there is great need, you will see how that tiredness, those burdens and anguishes are not going to exhaust you and the most beautiful part of this is that you will not stop bearing fruit.

Trusting the Lord is hard when you are anguished, sad, and crying, but the only solution is to trust Him. In this seventh level, you feel that you have fallen low and that you are entangled in many things due to the curse of trusting others; however, you are still on time of making a brave decision and begin to be a blessed man; furthermore, every curse will be removed in the name of Jesus Christ.

Eighth Sign

You get a car through either a loan or leasing. You already have a car but you need to make other believe your economic stability is ok so you buy it. There is no problem... the car is meant for daily use, but the problem is that you want to show it to your friends, family, members of the church, and other people which is ok even when you owe that car in full. However, that is sin in the eyes of God because what you want is to cover your situation, and you are not going to prosper because that is sin. It is better to ride a bicycle, to ride a bus or even on foot because you do not have to pretend being somebody who you are not.

Proverbs 28:13

¹³ Whoever conceals their sins does not prosper,

but the one who confesses and renounces them finds mercy.

The word is really clear; whoever who conceals their sins will not prosper. Many times we buy that car because that is our cover letter, but you will not prosper since you want to cover that sin with an attitude. The bible advice us two steps. The first one is to confess our sins, and second is to get rid of them to find mercy and miracles in your life.

Ninth Sign

When you get into this level, the total amount of debts takes over your actives, working actives, cash, properties etc. God wants you to live in a supernatural way and not a natural way as the book of Job 13 says. He does not want you to live in the fake world of business, He wants you to pay a fair salary to her employees because a worker is worthy of his income. Do not take advantage of other people. You must live supernaturally to wait for the willingness God not yours.

Job 13:15

¹⁵ Though he slay me, yet will I trust in him: but I will maintain mine own ways before him.

What this verse says is that you will trust Him and maintain my own ways; do not allow anybody to force your way or somebody to tell you which way to take. Even when you are so deep in debts, you must wait in the Lord. Do not make decisions in the spur of the moment. Do not take away anything from poor; do not take advantage of people who have some money because you can take that money away in an easy way.

Proverbs 22:22-23

²² Rob not the poor, because he is poor: neither oppress the afflicted in the gate: ²³ For the LORD will plead their cause, and spoil the soul of those that spoiled them.

This is important; if you are a poor person; nevertheless, not economically, but you are a simple person whose money has been tried to be stolen or you are a person who is looking for someone who has some savings, and you are oppressing and afflicting, what God says is that he will defend the cause of them. Perhaps you identify a poor widow and

her husband death left her \$5,000.00 and you offer her a business because you are the diaconate of the church. Let us be careful when assuming our position to make business and taking away the poorest ones with hot air and astuteness.

Proverbs 15:27

²⁷ He that is greedy of gain troubleth his own house; but he that hateth gifts shall live.

In this ninth level, the one who has unjust profits ruins the house. If you are thinking in how much you are going to pay to that employer to make that favor or the other person to plan unjust profits, be careful because you are going to ruin your house, wife, and children and there will be no peace.

You have had unjust profits and they are gone, that is why you have economic problems because that is not the way to get the blessing of God. The real blessing is the one that enriches and does not bring punishment or curse. Getting a loan to invest is not a biblical principal because you can lose your investment and still owe money. That is economic bondage.

Tenth Sign

The illness comes and your economic and physical health is consuming you due to your indebtedness. You have to study your debts to get out of them.

Luke 14:28-29

²⁸ For which of you, intending to build a tower, sitteth not down first, and counteth the cost, whether he have sufficient to finish it? ²⁹ Lest haply, after he hath laid the foundation, and is not able to finish it, all that behold it begin to mock him.

In this level what the Lord wants to tell you is that you must calculate your financial value. You must stop and see what your real situation is. The cornerstone of your economic progress is to produce more than what you are consuming and not just living to consume what you receive every day not to fall in huge problems.

The sixth cycles of planning you have to follow:

1- If you are between 20 and 25 years old, you are full of vitality and you want to learn, but you wait in long-term conditions and do not work in short term; you have limited income and your economic situation is complicated because perhaps you have left the house of your parents; you have to pay rent, furniture, personal maintenance, vehicle, and you are a single young person. This is the age to begin planning. If do not have problems, stay at the house of your parents and grow professionally; do not invest in anything.

2- If you are between 25 and 30 years old, probably you are either married or about to, so you begin to calculate all in base of two incomes; you rent an apartment, buy furniture, vehicle, enjoy life as couple, go out of the country, eat outside with your wife etc. There are few savings, and you are in a mistake, so change that attitude.

3- If you are between 30 and 35 years old, you already have children which affect your finances. You need more space; you can no longer live with your wife and children in an apartment, you require a house. There are more expenses, and you are thinking on having your own house. No more personal satisfactions, trips, and dinners. At this age, I advise you to take a life insurance.

4- If you are between 35 and 50 years old, you are in your period of maturity where your capacity of saving is on the top. This is the moment where you must have an economic

stability, own house, and get over the mid-life crisis where the man wants to go back and be young man. Many people at this age are getting divorce and have economic and emotional problems. So you must never lose at this stage your economic stability because you would be in serious difficulties.

5- If you are between 50 and 65 years old, children are leaving, and you need a smaller house. In this cycle you should not be with economic commitments and huge financial debts; expenses must be reduced in this cycle, and you should have a relaxed life; moreover, you must keep looking for increasing your patrimony; also you can keep producing it with no more tangles and debts. Children are gone; you can buy a smaller house and reduce expenses because you should not keep paying a lot in the maintenance of a big house which is proximally 10% of your income.

6- If you are between 65 years old, you are already retired. In this stage, you must live with what you have saved. The expenses of your wife are less and you are more interested in health. Do not invest and protect what you have to live the rest of your life worthily.

These are the ten signs of financial problems in our house. The management of different cycles of life will give you the freedom to serve God as He wants because the word of God says:

Luke 16:13

¹³ No servant can serve two masters: for either he will hate the one, and love the other; or else he will hold to the one, and despise the other. Ye cannot serve God and mammon.

This is the time where we cannot serve two masters because if we do it, we will hate one and love the other one. Now my dear friend, I want to bless you in the name of Jesus Christ, and I declare that every fear must disappear if you have seen one of those signs; furthermore, I will minister you if have made wrong decisions in the name of Christ Jesus.

Every fear, lack of trust in financial business, and every worry that has brought slavery is going to fade away in the name of Jesus Christ. Romans 14:23 says that any action with no faith is sin.

Dear Lord, I declare the anointing of the Holy Spirit over all this people, and the favor of God be with them and not against. In the name of Jesus Christ, I take away every fear to failure which stops every action in the life of those people who have read this book.

If you do not take the risk, you are not going to be exposed to failure, but also you will not be able to reach the success that God has for you. Get up and do not stop dreaming; this is the time of starting because God has a miracle for you today.

In Jesus Christ does there are no impossible things. The word impossible does not exist; His words have power. Now confess good words and not the incorrect ones with no effects. Let us establish objectives in your life and right now you are going to work in the function of the image of God that you reflect because based on the size of God, thus your thoughts will be in Christ Jesus. I declare that your trust will be based on trusting on God; you will look for the direction to Him; a style of life based on his willingness.

Do not try looking for what everyone has because every excuse to be a blessed woman and man will be gone. We get prepare for blessing right now, and I get rid of negligent hands of the ones who are reading this book, and I declare diligent hands that

enrich in the name of Jesus Christ. Every life of failure and lie that is retaining the benefits for your life in this moment is gone. We cleanse your house, business, robes, spouse, children, and I declare that every contamination will be taken away in name of Jesus Christ.

12 Steps to change

Sequence of the Perfect Complement

Tonight I want to teach you how to build that bridge of the information to the application. It is critical that you learn to assimilate what you have heard. You have heard very valuable pieces of information, and the sad reality is that they just stay written in your notebook.

The madness or insanity is related to people who expect something different but they do not do anything different; they expect to have different results but continue doing the same thing. They are insane if they leave this conference expecting that something different will happen without changing the routine.

They cannot just leave, praise the Lord, and say that they are different if they do not have a plan to make that change happen. They are still crazy and insane if they keep thinking they will have different results and changes if they keep doing the same things over and over again.

Romans 12:1-2

I beseech you therefore, brethren, by the mercies of God, that you present your bodies a living sacrifice, holy, acceptable to God, which is your reasonable service. ² And

do not be conformed to this world, but be transformed by the renewing of your mind, that you may prove what is that good and acceptable and perfect will of God.

Amplified Bible, Romans 12:1-2

“Therefore I urge you, ^[b]brothers and sisters, by the mercies of God, to present your bodies [dedicating all of yourselves, set apart] as a living sacrifice, holy and well-pleasing to God, which is your rational (logical, intelligent) act of worship. ² And do not be conformed to this world [any longer with its superficial values and customs], but be ^[c]transformed and progressively changed [as you mature spiritually] by the renewing of your mind [focusing on godly values and ethical attitudes], so that you may prove [for yourselves] what the will of God is, that which is good and acceptable and perfect [in His plan and purpose for you].”

God does not want us to go along with the things we see on television or read in magazines; he does not want us to act according to this world. He wants us to be transformed and have this change modify our lives. We can realize and accept that there are certain changes that must be done, and He says He will tell us through the renovation of the mind how we are going to make these changes we need in our lives.

If you want a change in your life, you must understand that you are going to achieve it through the renovation of the mind. The renovation of the mind does not mean only to learn new information; it is also learning how to use it. You do not renew your mind by acquiring new information; the renovation of the mind is more than learning is changing, and change is a clear evidence of renovation. If for long time we have been satisfied because we have new information and discoveries, and we think that is a renewed mind, let

me tell you that is not true; a renewed mind is changing; not a new full notebook of information.

The evidence of a renewed mind is when you take that information and provoke a change in your life. Therefore, before you say your mind has been changed, you must understand that a renewed mind means a changed life and when you take that information to allow a life transformation, you can say with truthfulness and confidence that you have a renewed mind; however, this is a process not an event.

This process has begun with a sequence of lessons but is not going to be completed until we have the evidence of change. Once we have that change as an evidence, we have what is called a renewed mind. We must be transformed by the change renovation of the mind. When you come back home, God wants that somebody recognizes that a process has started in your life and whoever that has been exploiting you realizes that you are in a process to be transformed. The transformation occurs through the transformation of the mind; to be changed. Change is not completed until you change. Change is not change because you wish or need to be changed or because your mother told you that you need to change. Change is real until you change and this is not going to happen if you do not recognize the madness of your life and make the decision of beginning a process to the transformation. Change is process and a way of life.

2 Corinthians 5:17

Therefore if any man be in Christ, he is a new creature: old things are passed away; behold, all things are become new.

2 Corinthians 5:17 Amplified Bible (AMP)

Therefore if anyone is in Christ [that is, grafted in, joined to Him by faith in Him as Savior], he is a new creature [reborn and renewed by the Holy Spirit]; the old things [the previous moral and spiritual condition] have passed away. Behold, new things have come [because spiritual awakening brings a new life].

You will have to ask for the unction assistance and be in a position where you can have that yoke destroyed. Due to the lack of knowledge, many of you have adhered burdens and yokes to your lives as singles and need unction to remove them. There are things that you have picked up, and you will need unction to get rid of them. God promised that old things are going to be new. There are old things that you left at home but when you get back, you will carry new things. Think about those old, weak, and insecure things about yourself, but all things that you receive will be new. What you need to do is to build up a plan to take these new things to your home and throw away the old things.

The biggest change that can be done the one you do on yourself. Do not keep busy trying to be another person. The biggest change is you because when you change, this will demand an answer from the people which are around you. If you are not responding, you are not going to get this kind of answers. Change yourself! That is what you should do.

Psalms 55:19

God shall hear, and afflict them, even he that abideth of old. Selah. Because they have no changes, therefore they fear not God.

Psalm 55:19 Amplified Bible (AMP)

God will hear and humble them,

Even He who ^[a]sits enthroned from old— Selah.

Because in them there has been no change [of heart],

And they do not fear God [at all].

The fact that people do not show changes is because they do not fear God. Before you say how much you love and worship the Lord, do not tell him the commitment you have for the cause if you are not willing to change. Of course you are single people, but you are born-again Christians, and filled with the Holy Spirit. However, what God is telling us is that we must show our love, reverence and worship through the demonstration of changing and walking in the fear of God saying: “God I am willing to change; I see what I have to do, where to go; and I have the will to make this change”.

The question is always the same. Do I want to change? But how do I do it? I want to give you 12 steps to the process of changing. I will give you all steps at once and later I will spend time on the ones I consider the most important ones. How many of you are ready to change? How many of you are going to change? I will give you a plan so you can do it.

- 1- Make the decision of changing.
- 2- Give all your willingness to God.
- 3- Have the desire of changing.
- 4- Increase your knowledge.

5- Look for the word of God as a mirror for changing.

6-Apply diligently the truth that you learn every day.

7- Keep safe the entries to your heart.

8- Keep your mind away from old memories.

9- Be selective to what you are exposed.

10- Get rid of your past.

11- Be open to corrections and be teachable.

12- Depend on God and others (discipleship) for support.

If you take and apply these 12 steps to make a change in that specific area of your life, I can guarantee that in one year, you are not going to be the person you are now. You will not be the same!

1- Make the decision of changing. It sounds so simple but this step is where many people or the majority keep failing because they do not understand the power of making a decision. The decision is the open your door to the reality; it will not become reality until you make the decision. Once you make it, the heaven, angels, and God will support you. The decision is an open door to reality for example “I want to lose weight”. You must make the decision of stop eating fast food if you want to lose weight; otherwise, you are not going to make it.

You are at one decision and one step of what you believe through God is going to happen in your life. You must make the decision to change. Say this: right now I make a great decision of being unique, apart and complete. Now, the heavens support you. The angels of the Lord have been released so they can go in front and from a supernatural and divine way, they can fix your path. There is a way that has been prepared for you.

Ephesians 2:10

For we are his workmanship, created in Christ Jesus unto good works, which God hath before ordained that we should walk in them.

Ephesians 2:10 Amplified Bible (AMP)

For we are His workmanship [His own master work, a work of art], created in Christ Jesus [reborn from above—spiritually transformed, renewed, ready to be used] for good works, which God prepared [for us] beforehand [taking paths which He set], so that we would walk in them [living the good life which He prearranged and made ready for us].

God almighty said that he had predestinated and planned all before you were born. He had chosen the path in which we were going to walk; that path is the one for a good life. Every person, no matter their circumstances or marital status, God has predestinated your way. This is your path before you get married; the one of a good life. You do not need to get married to go for that way, so make the decision.

2- Give all your willingness to God

Isaiah 1:19

If ye be willing and obedient, ye shall eat the good of the land

Isaiah 1:19 Amplified Bible (AMP)

*“If you are willing and obedient,
You shall eat the best of the land;*

Are you willing to change? Are you willing to be completed? Are you willing to obey God?

3- Have the desire of changing

You are not going to change because somebody wants you to change. You have to have the desire of changing; this desire is your motivation. Without desire there is no motivation and anything that gets your attention is what you are going to desire. If you pay attention to God, his word and the changes in his word that is what you will desire but if you pay attention to other things, this is what you are going to desire. The desire created depends on what gets your attention; care about God and His word, and that is what you are going to desire. You will have to design it as business person and take care of it. Your life can change with the simple fact of reading the word daily. God is not going to come and change you; you will have to do it.

The vision does not work without direction. If you want to be really successful as a single person, make sure your precious possession is an uninterrupted connection with heaven where you can listen to God constantly. I can feel from God that there are going to be meaningful and important changes which are going to happen tonight. You will realize that when there is no need for marriage, the opportunity will appear. God tells you that you

need Him and if you do not cling to Him, you are not going to be ready for somebody else because if He cannot help you, nobody will.

4- Increase your knowledge

If you want to increase your experiences, you need to strengthen your knowledge base; you have to be in the position of learning and adding more knowledge. Your knowledge base is the cornerstone on what you can build, but if your knowledge is small and superficial so will your experiences be. What you do when you go to conferences is to increase your knowledge and now your experiences will do it too because your knowledge has increased. I believe that leaders are readers; I also believe that books and CD's mean more learning. You are experimenting what Christ has, and you have to learn a lot of things. You will never increase your experiences while being an ignorant. Change will come when you get in a learning attitude.

5- Look for the word of God as a mirror for changing

That is the way you make a change also the way how you must fix it. When you get up in the morning you realize what you must do which is combing your hair. You must do the same with the word of God. When you see that word, that word brings an image, and you begin to correct things about your life until it aligns with that reflection and that word is the word of God.

You must start looking at your life and begin analyzing the decisions you are going to make and make changes in those decisions because if not, you are going to guilt the devil and doubt about God if you do not realize that you have to renew yourself and make good

decisions. You must be willing to examine yourself. We do not like to judge ourselves but we do not have problems to judge others. So we need to look at our lives every day and that is the way of improvement and God will realize that you have a good heart because you have the intention and the desire to make things well.

6-Apply diligently the truth that you learn every day

Through diligence you change or renew the spirit mind. Applying it only once is not going to bring any change but applying it all the time will. Mind and spirit change comes through diligence; think diligently in new ways and things. You must do it every day. Many people fail in the renovation of the mind because they are inconsistent. It is not that you do it only once and then you get back home and the rest of the year you act like a fool. You must start today. Also people fail because they do not build limits around their decisions. If you decide to do something, you must build up limits and include fences to protect that decision because there are many outsider influences which will try to come and challenge the decision you made.

7- Keep safe the entries to your heart

Proverbs 4:23

Above all else, guard your heart, for everything you do flows from it.

Proverbs 4:23 Amplified Bible (AMP)

²³ *Watch over your heart with all diligence, For from it flow the springs of life.*

God says that we must guard, care, and be aware of whatever comes into our heart, anything that we listen to and is around us. Guard your heart because from it springs the issues of life. You have to take care of your heart because whatever that comes into it will act like a seed, and it is going to emerge and anything that emerges from it will be your life.

Wherever you are right now, if you do not like where you are living today, you must plant new seeds in your heart because whatever flows from it will be your life. You must watch your mouth and say anything you want to say and what you want to say is what you must say because when you say something and listen to it, you are responsible of planting that seed in your heart. Your spirit is like the ground; if you plant something, the ground will work on it. Your spirit works the same way to produce fruits in your life. It does not know the difference between good or bad. You have to train your spirit to say only what you want you want to say. Also you must train it to put the words you want to say and when it comes to your life, your spirit will be familiarized and anything you speak will happen and if you are speaking correctly, it will happen faster.

You must guard your heart. What are you saying of yourself, your future, your relationship? What are you saying? What you are saying is what your life will be. The life you live is the result of the seeds you have allowed to come into your heart because anything that the spirit produces is the result of what enters into it. You have to take all those things you have been learning and begin to plant them in your heart then you must guard them into it.

8- Keep your mind away from old memories

How many of you know that old memories will appear again? Do not be quiet when they come to you. You cannot defend your mind with thoughts. When these old thoughts come to you, open your mouth and speak the word of God. You fight thoughts with words. Open your mouth, and make them obey with the words you say.

9- Be selective to what you are exposed

I am simply talking about certain people, places, and things. If you are overcoming your drug addiction, you must not be exposed to people who do drugs. You cannot help anybody who does not want to change. The biggest change that some people can make is related to the people they see. Some of you would see a change in your lives just by getting a new group of friends. There are people in your life that if you want a change, you must be set apart, and sometimes there are old relationships which are equal to old life styles. So you have to work on a new circle of friends.

10- Get rid of your past

It is related to the ninth step. At the same time that you dissociate from the past is because you are busy trying to reach the future. When you are busy with the things in front of you, the things which are behind you will not hold you back.

11- Be open to corrections and be teachable

You must realize that corrections can be responsible of keeping you in the right direction to reach the calling of your life. If you think that you are not open to corrections, and that you are not teachable, this can be a dangerous position because you have been convinced that you are okay being alone doing what you commonly do, and you do not

want to listen what somebody else has to tell you. You cannot have a real change if you are not open to corrections.

12- Depend on God and others (discipleship) for support

God is your source. You cannot change yourself, I thank God for those people I can see and touch, and for those I can sit with and receive the support I need from them. You must get a support system. You have to have God's support but also you must have the support of others. You nurture yourself while others are nurtured by you. If you take time to make another person grow, you are going to grow too.

Say this out loud

“In the name of Jesus, I am complete; I am unique; and I am in the process of changing. I make the decision of changing. I give my willingness to the plan of God. I have the desire, and I increase my knowledge base. The word of God is my mirror for changing and with diligence I am going to apply what I have learned in this conference. I guard what comes into my heart because from it flows the issues of life, and I defend my mind from the old thoughts. I fight my old thoughts with words. I am selective on what I am exposed. Right now in the name of Jesus, I dissociate from the past. I am teachable, and I am open to corrections. I declare that God is my source, and I am going to involve my life in disciple and also I have the will to disciple others. Devil, be careful. I am not the same. I am complete. In the name of Jesus, I am blessed and anointed. Amen.

I am Single and that is Fine

There are many wrong ideas about the lifestyle of single people. All people want to rush things up and get married. You spend time going to the weddings of your friends and then you realize that the person you met is married; you see how people are making bonds and getting married. Finally you start thinking and let envy envelope you. Then you start saying you are better than off than that man who got married. So I want you to ask yourself. Why the rush?

Marriage has been flagged as the cure for any situation, it is a myth. If you believe that by getting married, all your problems will be solved and everything is going to be fine you are wrong. This is as wrong as saying that not being married means that there is something wrong with you. There are many people who believe they are not complete until they find “the right one” and there are many wrong ideas of “the right one” because there is more to life than “the right one.”

People define the “right one” as the person with whom they can share their deepest thoughts, dreams, and fears; they also think all gaps and obstacles can be solved through marriage. My body clock is ticking; I must do something about it. You must turn off that clock because if not, you are going to start rushing up and you do not understand the importance being down to earth.

Many people get married to fill out the loneliness and frustration gaps. You must examine what society says about singlehood versus what God says. T.V shows, movies, advertisements, magazines, books, and music show singlehood as an illness or a bump in the road of a permanent relationship. You must be careful on how you let the world’s

teachings enter your mind. According to the world, being alone is wrong. If you are single, you seen as incomplete, very demanding, rigid, gay or have some type of emotional problem. You must stop this train of thought because you have so much pressure on you want to fit in the world.

Do not transform marriage into an idol, if do it, you are going to feel desperate, and desperation leads to bad decisions. God did not create you to be desperate.

Psalm 37:34

³⁴ Wait on the LORD, and keep his way, and he shall exalt thee to inherit the land: when the wicked are cut off, thou shalt see it.

Psalm 37:34 Amplified Bible

*³⁴ Wait for and expect the LORD and keep His way,
And He will exalt you to inherit the land;
[In the end] when the wicked are cut off, you will see it.*

When I see time and synchronization, I see a sequence of related events. In other words, this comes right now, then something else, and then what comes after that. I think it is dangerous being an ignorant when looking at the sequence of the plan of God and not recognizing it. There are certain things that must happen be settled before marriage comes.

The first thing you must understand before getting married is your singlehood. You must understand there are certain things that you have to care for before you get married. Do not ever say that you are looking for your other half; you should never get married to

half a person. You must look for somebody who is complete, has confidence, knows what they are doing, and is fulfilling God's plan.

You should not look for the remaining half because God is not looking for two halves to be one, but we must have a complete person looking for another complete person whom they can reproduce, train, and raise other complete people at their home. We are destroying lives because we do not invest our time in our bachelorhood to develop ourselves. We need to seek God for him to show us his purpose in our bachelorhood and have the trust of who we are and thus understand what we must do.

Genesis 2:18

¹⁸ And the LORD God said, It is not good that the man should be alone; I will make him an help meet for him.

Genesis 2:18 Amplified Bible

¹⁸ Now the Lord God said, It is not good (sufficient, satisfactory) that the man should be alone; I will make him a helper (suitable, adapted, complementary) for him.

God said that he was going to make help for the man; appropriate, and healthy. I see this scripture and the topic which appears is "I am single" and after the topic of "I am alone". So I have to get married to avoid being alone. No, those are two completely different things. That is what God says in his scripture and that is his advice because Adam was not alone; he was visited by God and they had communion every day.

Adam did not have idea that he needed someone but God was the one who made the recommendation. For Adam to discover his singularity, characteristics, and qualities established by God, he needs to go beyond himself and discover what is like to be involved with somebody that looks like him so life is not only about him anymore. He needs to learn how to go further to see the need, partnership, and intimacy of what it is being involved with somebody else. Adam was walking in the glory of God; imagine what he was doing before Eva appeared. He was in communion and had certain partnership with God. He had a relationship with God, and he also was single before she appeared. Before she appeared, Adam was walking with God. Do not think that if you get married, you are going to get closer to God. You already need to be close to God. Do not depend on a relationship, husband or wife. You must develop an intimate relationship with God in your single days, and you are going to reach the point of never feeling lonely. There are people who say they feel alone but if you have a good relation with God, you will never be alone. Nevertheless, it was important to God that the man had somebody next to him as the other species.

It is ok to be single but God recommends you not to be alone. What is the difference? Being alone means being separated, unique, and complete. Have you discovered your singularity? Are there things affecting your integrity? Suddenly, you begin seeing the style of a single person and realize that there a lot of things to do. You have too much work to do before facing marriage. You have to discover your singularity, planning and also what God wants you to do. Are you complete? Do you have integrity?

To be alone is not good but it is not wrong to be single. Think about all powerful people in the Bible who were alone, starting by Jesus. Even if you are married, your singlehood will be there in certain situations; for example, by your identity card or social

security number. You can be married but the fact of your individuality falls on every person at home has a different identity card. Another example is your fingerprints. You can be married but besides that your individuality and singlehood can be distinguished because nobody on earth has the same fingerprints that you have. The problem is not being alone because as you can see a keychain has many keys but each of them has a specific purpose, job, and locker to open. All keys can be together; nevertheless, there is a distinction which involves your singlehood. This bachelorhood needs to be developed. You can be married or joined to a group, but you will have to try to discover your singlehood and individuality, and you will have to work on these things to make you more whole.

Being alone and single means to be separated. You are in a position in which you are excluded. God says it is not good that we are alone but we do not have to confuse that with singlehood. I have heard many people saying they are single and alone using those words as synonyms but they are not. You can be single but not alone. You must be sure of who you are and develop security in bachelorhood and start enjoying your life. There are a lot of things to do. There are too many things to do for the kingdom of God and I want you to enjoy your singlehood. I want you to embrace the fact of being single, helpful, and designated; if you do not reach that point, you are not ready to be with another person. You do not need anybody to make you who you are; God already did that. Before you were formed in the womb of your mother, God already had a purpose for your life. We all have an established road in our lives because we do not choose it; we discover it because it is being already defined for us.

Bachelorhood is not something wrong or a negative state to be ashamed of. In contrast, it is something we must look for, because it highlights your individuality and singularity.

Proverbs 14:12

¹² There is a way which seemeth right unto a man, but the end thereof are the ways of death.

Proverbs 14:12 Amplified Bible

¹² There is a way which seems right to a man and appears straight before him, But its end is the way of death.

There is a way that seems to be correct and it looks like we should go through it. What do you prefer: A way that seems to be correct or the correct way? If we are going to step into the correct way, we must find the path God has for us. God has a path for us and we must start reaching for it. We must follow God, and what he has established for our life. What is that race I should be? What is the call has God established in my life?

As a single person, you must start looking for who you are. This becomes vital and I must determine whom I should be with. Who am I? What is the path I should follow? It is very important that you discover that path before you find out that man or woman and they decide if they want to submit to that path or not. There is a way that seems correct for man but then there is the way of God. What did God call us to do? What is the main purpose have we born to do? That is what we must start discovering and spend more time to find that way instead of looking for that person. You must find yourself and the singularity of

the master plan of God. I believe that if you start looking for God, his word, voice, and direction, you are going to find yourself in the plan of God. You must find yourself because there is nothing that brings certainty to your life until you know the purpose of why you were born as a single person. I want you to focus where you are right now for marriage to be what is supposed to be because you did and achieved everything you had to do before you enter in the department of marriage.

Jeremiah 1:5

⁵ Before I formed thee in the belly I knew thee; and before thou camest forth out of the womb I sanctified thee, and I ordained thee a prophet unto the nations.

Jeremiah 1:5 Amplified Bible (AMP)

⁵ “Before I formed you in the womb I knew you [and approved of you as My chosen instrument],

And before you were born I consecrated you [to Myself as My own];

I have appointed you as a prophet to the nations.”

This man was sanctified before he was formed in the womb of his mother because God is a God of plans and purposes. There was something that he had to do so he was called to be a prophet of the nations and God has decided this before he was formed. I cannot believe that each of you has been set apart from the womb of your mother to discover the race God has established.

Hebrews 12:1

12 Wherefore seeing we also are compassed about with so great a cloud of witnesses, let us lay aside every weight, and the sin which doth so easily beset us, and let us run with patience the race that is set before us.

Hebrews 12:1 Amplified Bible (AMP)

Jesus, the Example

12 Therefore, since we are surrounded by so great a cloud of ^[a]witnesses [who by faith have testified to the truth of God's absolute faithfulness], stripping off every unnecessary weight and the sin which so easily and cleverly entangles us, let us run with endurance and active persistence the race that is set before us.

We must start looking for God for that path that has been established in our lives. As a single person, you have to discover your singularity, individuality and the plan of God to discover what he has placed in front of you. When I first met my wife, I knew what I should do; further, I was working on what I must do. One of the things she noticed when she met me was that I was already working in the plan of God. She had seen someone who had discovered the plan of God, and also someone who followed the purpose of what God had set up. I believe it is vital that people find you looking for what God has planned for you, and not looking for somebody else. Let me tell you something, if you do not have a job to do, you do not need the help of anyone. There is the possibility people ask you what are you doing, and your answer can be waiting for the Lord. You have to understand the Holy Spirit is not going to help until you do something, he will not help you. I found my

purpose and next to it was my wife because on what God called me to do, I did not have time for distractions.

1 Corinthians 9:26

²⁶ I therefore so run, not as uncertainly; so fight I, not as one that beateth the air.

1 Corinthians 9:26 Amplified Bible (AMP)

²⁶ Therefore I do not run without a definite goal; I do not flail around like one beating the air [just shadow boxing].

Nobody is going to give you as much trust and dignity as certainty. God says nobody runs with no defined direction or flail around like beating the air trying to find the direction. He walks with confidence and dignity for the conviction He has on His direction. When you know the plan of God for your life, dignity comes back. There is a certainty that comes with the understanding of that direction that God has planned and marked for your life. If you have not started with the purpose of God, you cannot tell Him to help you or somebody else to do it. You must not be paralyzed until you find somebody else, do not do it. I have met literally single people that paralyzed their lives until they found someone, and when they did, they had a boring routine. My word for you is: "Find your life".

Genesis 2:19-20 King James Version (KJV)

¹⁹ And out of the ground the LORD God formed every beast of the field, and every fowl of the air; and brought them unto Adam to see what he would call them: and whatsoever Adam called every living creature, that was the name thereof.

²⁰ And Adam gave names to all cattle, and to the fowl of the air, and to every beast of the field; but for Adam there was not found an help meet for him.

We can be sure that no animal was appropriate to pair up with Adam. In our search for the right person, we often call some animals by the wrong name; moreover, sometimes we fail to see who that person is in reality and you look beyond the obvious in desperation for a partner and call anyone the right man or woman. Adam saw the animals for whom they were and left them alone. There are many people who lose their time with animals and nobody should get married until they find and feel complete by their singularity and integrity. If you ignore this, your marriage will be in problems already before you get into it. What is a need in this life style of single people is the development of the integrity, so you can present yourself as someone with integrity and completeness in spirit, soul, and body then you will find someone with the same qualities and that marriage will have a great opportunity. Unfortunately, due to your lack of respect and love for yourself, this will be projected in others.

The secret to enjoy the single life is loving yourself. The Bible clearly states that we can love our neighbor the same way we love ourselves. We must love ourselves and the act of loving itself means to respect yourself and that means not to allow other person to disrespect you. I truly believe that you can enjoy God as your friend. You establish yourself to experiment and enjoy a true single life when you make the correct bonds with God.

Hosea 2:19-20

¹⁹ And I will betroth thee unto me for ever; yea, I will betroth thee unto me in righteousness, and in judgment, and in loving kindness, and in mercies.

²⁰ *I will even betroth thee unto me in faithfulness: and thou shalt know the LORD.*

Adam did not need a wife to complement him; she complemented him. We have the same promise of intimacy he had. You have the best friend around you.

Chapter V

Data Analysis

In this chapter, the investigator will show the analysis of the translations of the texts *Manual of the Costa Rican Fire Corps* from English into *Spanish* and *12 Steps to Change*, *10 Signs of Financial Problems*, *I am Alone and that is Ok*, and *The Practical Side of Singleness* from Spanish into English. Furthermore, the researcher will show the results obtained through the instruments used along with the translations' analysis.

5.1 Analysis and Interpretation of the Results

The researcher will illustrate the methods applied in the translations and the instruments used to reach the objectives previously mentioned such as the analysis chart, color coding and the glossary.

5.1.1 Text Analysis

| Text analysis element | Manual of the Costa Rican Fire Corps | 12 Steps to Change | I am Alone and that is Fine | The Practical Side of Singleness | 10 Signs of Financial Problems |
|------------------------------|---|---------------------------|------------------------------------|---|---------------------------------------|
| Text Style | Discussion | Narrative | Narrative | Narrative | Discussion |
| Stylistic Scale of | Formal | Neutral | Neutral | Neutral | Neutral |

| | | | | | |
|--|---------------|---------------|---------------|---------------|--------------------------|
| Formality | | | | | |
| Stylistic Scale of Generality | Technical | Neutral | Neutral | Neutral | Neutral |
| Stylistic Scale of Emotional tone | Factual | Warm | Warm | Warm | Warm |
| Text Function | Informative | Vocative | Vocative | Vocative | Informative/ Vocative |
| Type of Translation | Communicative | Communicative | Communicative | Communicative | Communicative |

Table 5. Shows the text analysis of both documents that were translated

5.1.2 Color Coding

| Procedure | Example | Explanation |
|---------------------|---------------------|--|
| Transposition | Transposition | Highlighted in red |
| Modulation | Modulation | Highlighted in yellow |
| Omission | <u>Omission</u> | Underlined in the source text and in Black |
| Amplification | Amplification | Highlighted in turquoise |
| Explicitation | Explicitation | Highlighted in green |
| Literal Translation | Literal Translation | Highlighted in pink |

Table 6. It illustrates how the translation procedures will be highlighted in the documents translated.

5.1.2.1 Color Coding: Manual of the Costa Rican Fire Corps

The color coding of this technical document shows different procedures that helped the investigator to convey naturalness with accuracy. For instance, Amplifications and

some Transpositions and Modulations were necessary to provide naturalness to the text; Literal Translation and some Omissions provided the accuracy that all texts must have and the procedure of Explicitation rendered the comprehension to understand certain parts of the text.

Paragraph #1

Breakdown can more subtle, because **it** applies wherever the insulation has lost its insulating capacity, completely or in part, thereby allowing the current to follow an unintended path. A circuit must be energized for overheating to occur from insulation breakdown; however, the equipment **does** not need to be operating. The circuit can offer an unintended path for current to flow from hot(energized) to **either** ground or neutral via conductive contaminants or pyrolysis products by three routes: (1) through **the** insulating materials, (2) across the surface of the insulating materials, or (3) through air. When current flows in a limited area between conductors, it is often called *arc tracking*, *arcing through char* or *carbon tracking*.

Translated Version #1

La falla puede ser más sutil porque actúa **donde quiera que** el aislante haya perdido completamente o en parte su capacidad de **aislamiento**, de este modo, **permite que la corriente siga un camino no deseado**. Se debe activar un circuito para **que de la** falla del aislante haya un sobrecalentamiento; sin embargo, **el equipo no necesita estar operando**. El circuito puede ofrecer una ruta no deseada para **que la** corriente fluya de caliente (energizada), a **conexión a** tierra o vía neutral **a través** de contaminantes conductivos o productos pirolíticos, por tres rutas: (1) mediante materiales aislantes, (2) a través **de** la superficie de los materiales aislantes o (3) a través **del** aire. **Con frecuencia** se le llama *arco*

de rastreo, arco a través de carbono o rastro de carbono, cuando una corriente fluye entre conductores en una zona reducida.

Paragraph #2

The result of this carbon tracking is that **something that is** supposed to be an insulator becomes a semiconductor. This transformation often occurs over an extended time and at such a slow rate that it is not readily detectable until the conductive path it creates can conduct **so** much current that massive heating can occur. The **time** frame can be as long as months or years prior to the ignition fire. For instance, if an insulator absorbs moisture, a small current can flow, producing some heat. This heat can slowly degrade organic insulation in the vicinity and turn some of it to carbon. Once enough carbon is formed between conductors, more current can flow along the carbon path, providing localized heating and further degradation.

Translated Version #2

El resultado de este rastreo de carbono es que un supuesto aislante se convierta en un semiconductor. Esta transformación a menudo ocurre durante un tiempo prolongado y a una velocidad tan lenta que no está lista para ser perceptible hasta que el trayecto conductivo se forma; este puede conducir tanta corriente que podría producir exceso de calor. El periodo puede ser tan largo como unos meses o años previos a la ignición de un incendio¹⁷. Por ejemplo, si un aislante absorbe humedad, una pequeña corriente puede fluir produciendo algo de calor. Este calor puede degradar lentamente el aislante orgánico en los alrededores y convertir una parte en carbono. Una vez que se forma suficiente carbono entre los conductores, más corriente puede fluir a lo largo del trayecto del carbono, lo que provee un calentamiento local y una mayor degradación.

Paragraph #3

Leakage Current

This development of an alternative path is sometimes called leakage current. If the surface of an insulator is contaminated, some of the current leaks across the trail of contaminant and begins the process **just** described. Figure 10-28 shows leakage current heating the surface of a contaminated plastic plug. Note the plug is energized but not connected to an appliance. The current **being drawn** by this flow was 0.25 A or less, but at 120 V, this caused **some** 30 W of heat to be procedure in a very small are and created such high temperatures that glowing combustion was visible.

Translated Version #3

Fuga **de** corriente

El desarrollo de un camino alternativo es a veces llamado *corriente de fuga*. Si la superficie de un aislante está contaminada, algo de la corriente se filtra a través del camino del contaminante y comienza el proceso descrito.

La figura 10-28 muestra **una** corriente de fuga calentando la superficie de un enchufe **de** plástico contaminado. **Tome en cuenta** que el enchufe está energizado, pero no **está** conectado a un aparato. El flujo de consumo de esta corriente era **de** 0.25 A o **un poco** menos; pero **a los** 120 V, esto causó **que produjera** 30 W de calor en una zona muy pequeña y temperaturas tan altas que **el** brillo **de la** combustión era visible.

Paragraph #4

This situation is more prevalent in inexpensive electrical appliances on which low-quality insulation is used. This occurrence has **been** reported in appliance switches, from the ignition of the insulation supporting contacts, and has been seen in many devices-televisions, clothes dryers, coffeemakers, smoke alarms, molded plugs, and the like. Materials used for insulation, even high-quality appliances, are selected on the basis of **the** thermal conditions expected under normal use. If an otherwise safe power cord is used in an abnormally hot environment or even **buried** under carpets or blankets, the heat **being** generated cannot escape. The heat can then build up, **possibly** beyond the design limits of the insulation and the insulation begins to degrade.

Translated Version #4

Esta situación es más frecuente en electrodomésticos **de bajo costo**, en **los que** se utilizan **aislantes** de baja calidad. Este hecho se ha presentado en interruptores de **aparatos eléctricos** desde la ignición del aislante **que protege** los contactos y se ha visto en muchos aparatos **como** televisores, secadoras de ropa, coffemakers, detectores **de** humo, **toma corrientes hechos a la medida** y demás. **Los materiales usados para el aislamiento, incluso en aparatos de alta calidad son seleccionados con base en las condiciones térmicas previstas bajo su uso habitual.** De lo contrario, si un cable **de** alimentación se utiliza en un entorno excesivamente caliente o incluso debajo **de** alfombras o mantas, el calor generado no podría escapar. Después el calor se podría acumular más allá **de los** límites del diseño del aislante y **este** empezaría a degradarse.

Paragraph #5

It should be remembered that overheating conductors first cause degradation of the insulation surrounding them, followed by degradation of plugs, sockets, and other

hardware. **It is** only then that heat from an overheated wire will affect other fuels. Once flame is established, other fuels, whether cellulosic or thermoplastic, can be quickly involved. Figure 10-29 shows the plastic receptacle plate and plug in flames as **the** result of a simulated insulation degradation failure of the receptacle.

This degradation mechanism has been linked to causation of fires in a variety of assemblies and circumstances: insulators on fluorescent lamp connector, electrical cords exposed to external heat, plugs and receptacles.

Translated Version #5

Se debe recordar que sobrecalentar los conductores primero causa la degradación del aislante rodeándolos, seguido por la degradación de enchufes, tomas y otros equipos. Solo entonces el calor de un cable sobrecalentado afectará a otros combustibles.

Una vez **que la** llama haya iniciado, **otros combustibles como celulósicos o termoplásticos** pueden ser rápidamente involucrados. **La** figura 10-29 muestra la placa **del** toma corriente **de** plástico y **el** enchufe **envuelto** en llamas como consecuencia de un fallo simulado de degradación **del** aislante del toma corriente.

Este mecanismo de degradación ha sido relacionado como causa de incendios en una variedad de montajes y circunstancias **como con los** aislantes **de los** conectores **de** lámparas fluorescentes, cables eléctricos expuestos al calor externo, enchufes y toma corrientes.

Paragraph #6

Just as heat exposure causes chemical exposed to external heat, plugs, and receptacles. Just as heat exposure causes chemical and physical changes in wood, similar changes can take **place** when plastic insulators are exposed to heat. This heat can be from high resistance connections, sustained high current flows, or external heating. Loose connections in household (15 A) circuits have been found to produce **connector** temperatures between 150 °C and 200 °C (300° and 400 °F). Such high temperatures (even if cyclic) will cause PVC and urea formaldehyde insulators to degrade and develop tracking capability. Once current begins to flow through the degraded material, localized heating and ignition will follow. ¹⁸

Translated Version #6

Así como la exposición al calor provoca cambios químicos y físicos en la madera, cambios similares pueden ocurrir cuando los aislantes de plástico son expuestos al calor. Este calor puede ser debido a conexiones de alta resistencia, flujos de alta corriente **sin interrupción** o calor externo. Las conexiones flojas en los circuitos del hogar (15A) son reconocidas por producir altas temperaturas **que están** entre los 150 °C and 200 °C (300° y 400 °F). Tales elevadas temperaturas [incluso en **un periodo cíclico**] causarían **que el** PVC [**policloruro de vinilo**] y los aislantes de urea-formaldehído se degraden y desarrollen la capacidad **de** rastreo. Una vez que la corriente comienza a fluir a través de material degradado, el calentamiento localizado y la ignición continuarán.

Paragraph #7

Water and carbon Tracking

Abuse of an appliance **such as** soaking it repeatedly with impure water or allowing conductive dusts to accumulate can trigger such carbon tracking. The higher the voltage, the more likely such tracking can take place. It is less likely in low-voltage, (<24 V) circuits but becomes more likely at higher voltages. ¹⁹ Figure 10-30a shows arc tracking between two terminals energized with a 12-kV neon sign transformer **that was** triggered by spraying distilled water on the wood between the terminals. The water leached enough materials **out of the** wood to support leakage current. The arcing produced as the wood pyrolyzed resulted in the ignition of the wood. Figure 10-30b shows the effect of rainwater that eventually caused a short in a neon sign connector that nearly ignited nearby wood surfaces.

Translated Version #7

El agua y el rastro del carbono

El abuso de **remojo** o **el permitir la acumulación** de **polvo** conductivo en un aparato, puede desencadenar **un** rastro **de** carbono.

Cuanto mayor **sea** el voltaje, **mayor es la** probabilidad **de que el** rastro pueda suceder. **Esto** es menos probable en **los** circuitos de menor voltaje, (<24 V) pero **se** vuelve más probable en voltajes mayores. **La** figura 10-30a muestra **el** rastro **de un** arco entre dos terminales energizadas con un transformador de neón 12-kV activado por rociar agua destilada en la madera entre las terminales. El agua filtró suficientes **materiales de madera** para ayudar **a la** filtración **de la** corriente. **Tanto** **la formación** **del** arco como la madera descompuesta, dieron **como resultado** la ignición de la madera. **La figura 10-30b muestra el efecto del agua de lluvia que eventualmente causó un cortocircuito en un conector de señal de neón que estuvo cerca de incendiar superficies de madera cercanas.**

Paragraph #8

While pure water is an insulator, **ordinary** tap water contains enough dissolved salts to be somewhat conductive, **and** the greater **the** salt content, **the** better the water conducts. Small amounts of impure water, **then**, can play a role in triggering arc tracking on insulators, but they can also cause corrosion that can result in high resistance, heat producing connections. These connections create localized heat and pyrolysis of their insulative **supports**, **and** additional current flows as the char develops. When water enters electrical equipment, **it** can provide additional paths for the current in parts of the equipment that are not meant to carry **such** currents.

Translated Version #8

Mientras que el agua pura es un aislante; el agua de tubo contiene suficiente sales disueltas para ser levemente conductora, cuanto más sal contenga, mejor conductividad va a tener. Las pequeñas cantidades de agua impura pueden jugar un papel importante en el desencadenamiento del rastro de arco en los aislantes; pero estas también pueden causar corrosión que puede resultar en alta resistencia; el calor produce conexiones. Estas conexiones crean calor localizado y la pirolisis de sus aislantes, además genera flujos de corriente adicionales a medida que el carbono se desarrolla. Cuando el agua se filtra en un equipo eléctrico, puede proporcionar caminos adicionales para que la corriente ingrese a partes del equipo que no se espera conduzcan corrientes eléctricas.

Paragraph #9

In addition to providing a potential electric shock danger, the presence of impure water has been seen to cause fires by allowing current flows along these unplanned paths. In one case, a storm broke the utility drop connectors and bent the entrance conduit. When

repairs were made, the entrance conduit was not repaired, and it had broken loose at the roof, allowing a path for the rain to flow directly down into the wall and into the electrical distribution system over time. The water contamination ultimately resulted in ignition and fire destruction. Fire codes list specific types of electrical equipment for wet or damp locations.

Translated Version #9

Además de proporcionar un potencial peligro de descarga eléctrica, la presencia de agua no pura se ha visto como una causa de incendios por permitir que la corriente fluya a lo largo de estos caminos no planificados. En un caso, una tormenta quebró los conectores de servicios públicos y dobló el conducto de la entrada. Cuando se hicieron las reparaciones, la entrada del conducto no fue reparada y se soltó con fuerza en el techo, permitiendo un camino para que la lluvia fluyera directamente hacia la pared y con el tiempo hacia el sistema de distribución eléctrica. La contaminación del agua dio como resultado, en última instancia, la ignición y destrucción del fuego.

Los códigos contra incendios mencionan tipos específicos de equipamiento eléctrico para lugares húmedos o mojados.

Paragraph #10

When regular equipment is exposed to these conditions, disaster can occur. In the test shown in figures 10-31a-d, water with an impurity was applied to an electrical switch. Sizzling, smoking, and flaming occurred as the plastic in the switch overheated. Note that the light was in series with the fault and limited the current flow in the circuit. The OCPD was not tripped because the current did not exceed 1.3 A. Wall

receptacles under towel dispensers in public restrooms are often affected by water corrosion.

Heating and Carbon Tracking

Heating of an insulated cable (or insulated wires inside a conduit or appliance) will cause the insulation to degrade, sometimes over a substantial area.

Translated Version #10

Cuando un equipo regular está expuesto a estas condiciones, un desastre puede ocurrir. En las pruebas mostradas en las figuras 10-31 a-d, se aplicó agua con un poco de impureza a un interruptor eléctrico, se produjeron chispas, humo y llamas, ya que el plástico del interruptor se sobrecalentó. Tenga en cuenta que la luz en serie estaba con una falla y limitaba el flujo de corriente en el circuito. El OCPD [dispositivo de protección contra sobrecorriente] no estaba activado porque la corriente no superó el 1.3 A. Los tomacorrientes de la pared que están debajo de los dispensadores de toallas en los baños públicos son a menudo afectados por la corrosión del agua.

El calor y el rastreo de Carbono

Calentar un cable que actúa como aislante (o cables aislados en el interior de un conducto o aparato) provocará que el aislante se degrade, a veces sobre un área sustancial.

Paragraph #11

Energized conductors within can then provide current that flows through the charred insulation (arcing through char) to either the ground or the neutral conductor or the grounded conduit. With conduit, this can “blow” a hole through the metal in the vicinity of

the arc(as seen in the figure 10-32). Note that such **a** hole is almost always a result of a preexisting fire and an initial cause. The localized heating **then** can pyrolyze and ignite the insulation. Molten metal particles can also be ejected to fall onto other combustibles **below**. Very high current single-phase or three- phase circuits will allow enough current flow between a damaged insulated cable and a grounded conduit (EMT) or flexible armored cable (BX) to melt a hole through conduit to cause a fire, as shown in figure 10-33.

Translated Version #11

Los conductores energizados internos pueden proporcionar una corriente que fluye a través de un aislante carbonizado [formación de arcos por carbono] ya sea a través del suelo, por un conductor neutro o por un conducto a tierra. Con un conducto se puede “forzar” un agujero a través del metal en la proximidad del arco. (Como se ve en la figura 10-32).

Tenga en cuenta que tal agujero es casi siempre el resultado de un incendio preexistente y no una causa inicial. El calor localizado puede descomponer y encender el aislante. Las partículas de metal fundido también pueden salir expulsadas y caer en otros combustibles.

Los circuitos de corriente muy elevada, monofásicos o trifásicos, van a permitir el suficiente flujo de corriente entre un cable aislado dañado y un conducto con conexión a tierra (EMT) o un cable reforzado y flexible (BX), para fundir un agujero a través del conducto y causar un incendio, como se muestra en la figura 10-33.

Paragraph #12

A very different mechanism is illustrated in figure 10-34. There the metal flexible (BX) cable housing became energized due to an open neutral and became a heating element that ignited the adjacent wood joists.

Arcs and Sparks

As we saw in chapter 6, an arc can be defined as the flow of the current through a gas (usually air). It can range from a brief discharge (spark) built up by walking on a dry carpet to a bolt of lightning. If an arc is sustained, the atmospheric gases through which the current is passing can be supplemented by ionized (plasma) vapors of the conductors involved (or, in the case of welding by the vapors of a flux or specialized gas).

Translated Version #12

Un mecanismo muy diferente se ilustra en la figura 10-34. Ahí la cubierta del cable de metal flexible se energizó debido a una apertura neutral y se convirtió en un elemento térmico que encendió las vigas de madera adyacentes.

Arcos y Chispas

Como vimos en el capítulo 6, un arco puede definirse como un flujo de corriente que circula a través del gas (normalmente aire). Puede variar de una pequeña descarga (una chispa) y acumularse al caminar sobre una alfombra seca y pasar a ser una gran descarga eléctrica. Si un arco se mantiene, los gases atmosféricos en los cuales la corriente está pasando, pueden ser complementados por vapores ionizados (plasma) de los conductores implicados (o en el caso de la soldadura, por los vapores de un flujo o gas especializado).

Paragraph #13

For an arc to establish **itself** in air between two conductors requires either a high voltage or a very small gap between conductors because air is a good insulator. Once an arc is established, **however**, it can be maintained as the conductors separate via the conductive path offered by the vaporizing metal and the ionized air molecules. This is especially true with DC currents, whose voltage does not cycle through zero periodically as does AC. As described previously, an arc produces very high temperatures, **on the order** of thousands of degrees, but **they** very localized, so fuel has to be in almost immediate contact with the arc for it to ignite.

Translated Version #13

Para **que** un arco se establezca en **el** aire **entre dos conductores requiere ya sea un alto voltaje o un espacio muy pequeño entre los conductores, ya que el aire es buen aislante.** Una **vez que** un arco se establezca, **este puede mantenerse**, en tanto que los conductores se separen **por la** vía **del** camino conductivo, brindado por el metal vaporizado y las moléculas **de** aire ionizadas.

Esto es especialmente verdadero con las corrientes DC [corriente directa], cuyo voltaje no pasa a través de cero periódicamente como lo hace la AC [corriente alterna]. Como se describió previamente, **un arco produce temperaturas muy elevadas de miles de grados, pero están muy localizadas**, así que **el combustible** tiene que estar casi en contacto con el arco para **que** se encienda.

Paragraph #14

Gases and vapors, including those from active pyrolysis of insulator, are **much** more readily ignited to flames than are solid fuels. Unless a solid fuel is very finely divided

or thin (like paper), it will resist ignition **by all** but the most energetic and prolonged arcs. Thin paper, lint, sawdust, and flammable gases and vapors are all ignitable by 120/240-V arcs in AC circuits.

When an excessive current is passed through a metallic conductor, its temperature rises to the melting point of that metal. As the first melting occurs, the wire severs and a parting arc occurs at this point (**which** may be sustained at high enough voltages).

Translated Version #14

Los gases y vapores, incluyendo los aislantes de pirolisis activos, están más preparados para encenderse en llamas que los combustibles sólidos. A menos de que un combustible sólido esté muy finamente dividido o sea delgado (como el papel), puede resistir la ignición, pero solo de los arcos más energéticos y prolongados. El papel fino, aserrín, la pelusa y los gases y vapores inflamables son capaces de encenderse por arcos de 120/240- V en los circuitos AC.

Cuando una corriente excesiva pasa a lo largo de un conductor metálico, su temperatura aumenta hasta el punto en el que el metal se funde. En tanto que se produce la primera fundición, el alambre se rompe y la separación del arco en ese punto se produce (podría mantenerse con voltajes lo suficientemente altos).

Paragraph #15

This arc creates very high temperatures locally, and melted metal is spattered onto cooler nearby surfaces, where it **recondenses** as droplets. While these sparks (often incandescent particles) are very hot, **they** do not have sufficient thermal capacity to ignite massive solid fuels nearby, except under the most unusual conditions. But recalling the

information on pyrolysis from chapters 3 and 5, we realize that sustained heat breaks down most plastic or cellulosic insulators into combustible gases and vapors and conductive char. It is often the gases and vapors that are the first ignited by the arc itself. The breakdown voltage of dry air is about 30.0000 V/cm (75kV/in.), but the minimum voltage at the minimum spacing (~ 0,01 mm) is still 340 V (CC o CA RMS - 240 V CA pico = 340 V RMS).²⁰

Translated Version #15

Este arco genera temperaturas muy altas a nivel local y el metal fundido se esparce sobre superficies cercanas más frías donde vuelve a condensarse en forma de gotas. Si bien estas chispas (usualmente partículas incandescentes) son muy calientes, no tienen suficiente capacidad térmica para encender combustibles sólidos masivos que estén cerca, salvo en las circunstancias más inusuales. Pero al recordar la información sobre la pirolisis de los capítulos 3 y 5 nos damos cuenta de que el calor continuo descompone la mayoría de plásticos o aislantes celulósicos en gases y vapores combustibles, así como en carbono conductor. Los gases y vapores son a menudo los que se encienden de primero por el propio arco.

La ruptura del voltaje del aire seco es de unos 30.000 V / cm (75 KV / cm), pero el voltaje mínimo, en espacio mínimo (~ 0,01 mm) continua siendo 340 V (CC o CA RMS - 240 V CA pico = 340 V RMS)²⁰.

5.1.2.2 Color Coding: 12 Steps to change

In this next color coding, the document shows a significant difference to the text previously analyzed due to the fact that the most frequent procedures used in these neutral

translations were Transpositions, Modulations, Omissions and Amplifications. The reason of this is because the texts are more expressive than informative, so the nature of texts forced the researcher to interpret more than to inform. On the other hand, the procedures of Literal Translation and Explicitation were not used as often as mentioned before.

Paragraph #1

Esta noche quiero enseñarte cómo construir ese puente de la información hacia la aplicación. Es vital que aprendas a asimilar lo que has escuchado. Has escuchado pedazos de información muy valiosos y la parte triste es que siempre se quedan escritas en tu cuaderno.

La locura o la demencia se refieren a una persona que espera algo diferente pero no hacen nada diferente. Esperas algo totalmente diferente y continúas haciendo la misma cosa. Y tú estás demente si sales de esta conferencia esperando que algo diferente te ocurra, pero no planeando hacer algo diferente. No puedes irte de aquí y alabar al Señor y decir que ya eres diferente si no tienes ningún plan para causar que eso pase.

Translated Version #1

Tonight I want to teach you how to build that bridge of the information to the application. It is critical that you learn to assimilate what you have heard. You have heard very valuable pieces of information, and the sad reality is that they always remain written in your church notebook.

Madness or insanity is related to people who expect something different but they do not do anything different; they expect to have different results when they continue doing

the same thing. **They** are insane if **they** leave this conference expecting that something different will happen **without changing the routine**.

They cannot just leave, praise the Lord, and say that **they** are different if they do not have a plan to make that **change** happen.

Paragraph #2

Estás demente **y loco** si sigues pensando que vas a obtener cosas diferentes y cambios, si continúas haciendo las mismas cosas. Él no quiere que nos conformemos con el mundo. Él no quiere **que** nos conformemos con lo que vemos en **la** televisión o **lo que** leemos en una revista. **Él no quiere que nos conformemos a esto. Él lo que dijo es que** quiere que nos transformemos, **y no se detuvo ahí porque también dijo que él quería que fuéramos cambiados. Él quiere que** el cambio **tome lugar** en nuestras vidas. Todos nosotros aquí podemos darnos cuenta y aceptar que hay ciertos cambios que debemos hacer **en nuestras vidas**. Y él **nos** dice **que él** nos va decir cómo **es que** vamos a hacer ese cambio que ocupamos que suceda en nuestras vidas, por medio de la renovación de la mente.

Translated Version #2

They are still insane if they keep thinking that **they** will have **different results** and changes if **they** keep doing the same things **over and over again**.

God does not want us to conform with what **we** see on television or read in a magazine; He does not want us **to be mundane**. He wants us **to be transformed** and have **this** change in our lives. We all here can realize and accept that there are certain changes **that**

must be done, and he says that he will tell us through the renovation of the mind how we are going to make these necessary **changes** in our lives.

Paragraph #3

Si quieres cambio en tu vida, debes entender que **esto lo** vas lograr con la renovación de la mente. El renovar **la mente** no significa solamente el aprender nueva información. El renovar la mente es también aprender. Tú no renovaste tu mente **solo** porque obtuviste nueva información nueva, el renovar **la mente** es más que aprender, es cambiar. La evidencia de **una mente** renovada es **el** cambio. Si por tanto tiempo hemos estado satisfechos **al decir que ahora** tenemos nueva información y **nuevos** descubrimientos entonces **nuestra** mente ha sido renovada, esto no es así; **la evidencia de** una mente renovada es un cambio, no **es** un cuaderno nuevo lleno de información.

Translated Version #3

If you want a change in your life, **you** must understand that you are going to achieve **it** through the renovation of **your** mind. **This renovation** does not mean just **learning** new information; **it is also learning how to use that information.** **You did not renew your mind** because you acquired new information; **the renovation** is **about** changing more than learning **and** change is a **clear evidence** of renovation. **If for a long time we have been** **satisfied because we have new information and discoveries**, and **we think that this is** a renewed mind, **we are wrong**; a renewed mind is **about** changing; not **just** a new notebook full of information.

Paragraph #4

La evidencia de una mente renovada es **cuando puedes** tomar esa información y causar un cambio sobre tu vida. Entonces, antes de que digas **que** tu mente ha sido cambiada; debes entender que una mente renovada significa una vida cambiada; y cuando **puedes** tomar esa información para permitir **que causen cambio en** una transformación en tu vida, **entonces** puedes decir efectivamente y **con** confianza que tienes una mente renovada; **hecha de nuevo**. El renovar de la mente es un proceso, no **es** un evento. El proceso ha comenzado con una serie de enseñanzas, pero no va a ser completo hasta que no tengamos **la** evidencia **que se llama** cambio.

Translated Version #4

The evidence of a renewed mind is **taking** that information and **prompting** a change in your life. **Therefore, before you say your mind has been changed, you must understand that a renewed mind means a changed life** and when **you** take that information to allow a **life transformation**, you can say with truthfulness and confidence that you have a renewed mind; **however, this** is a process not an event. **This process** has begun with a sequence of lessons but is not going to be completed until we see evidence of change.

Estoy Solo y Esta Bien

Paragraph #5

Hay muchos conceptos erróneos con respecto al estilo **de vida** de **los** solteros. **Todas las** personas quieren apresurarse para casarse. Pasas tiempo yendo a **las** bodas **de** **tus amigos** y luego ves que esa **otra** persona **que** conocías **también** se casó y **entonces** tú **empiezas a** escuchar que las personas se están conectando y se están casando. **Entonces** te pones a pensar, **un momento**..., y empiezas a involucrarte en una envidia competitiva y empiezas a decir que tú eres mejor **que con la** que ese hombre se casó. **Esto lo que hace es**

que le abres **la puerta a la** opresión para **que** venga **hay** entre **en** tu vida. Quiero **que te comiences** a preguntar cuál es el apuro.

Translated Version #5

There are many wrong ideas about **how** single **people** **lead their lives**. People want to rush up **and** get married. **Some** spend time going to **weddings**, and then you realize all your **friends are already married people**, and you see **how** people are bonding and getting married. **Finally you** start **thinking and** letting the competitive envy to envelop you. Then **you** start **saying** that you are better than that person your **friend married**, **and** you let oppression enter your life. Stop and ask yourself. **What is the rush?**

Paragraph #6

El matrimonio ha sido etiquetado como la cura para cualquier situación y **es un concepto erróneo**, es un mito, **es plena mitología que pienses** que si te casas **eso** te va a solucionar todos los problemas y **que** todo va estar bien; como si quisieras decir que algo anda mal contigo **si** no estás casado. Hay muchas personas que creen **que** no están completos hasta **que** encuentran “el indicado” **porque hay más que “el indicado”**. **Las** personas deokn al “indicado” como esa pareja con quien pueden compartir sus pensamientos más profundos, sus sueños y **sus** temores; **y** también piensas que los vacíos y obstáculos **en sus vidas** pueden ser solucionados a través **del** matrimonio.

Translated Version #6

Marriage has been flagged as the cure for any situation, and it is a myth that getting married is going to solve all **your** problems and everything is going to be ok. **This is the equivalent** of saying that something is wrong with you **because you** are not married. **There**

are many people who believe they are not complete until they find the “right one” and there are many wrong ideas of the “right one.”

People define “the right one” as the person whom they can share the deepest thoughts, dreams, and fears; furthermore, they think that their gaps and obstacles can be solved through marriage.

Paragraph #7

Mi reloj biológico está sonando, debo hacer algo. Debes apagar tu reloj porque si no lo haces, vas a entrar en un espectáculo de horror porque estás apresurándote para entrar en algo y no entiendes lo importante que es el buscar dónde es que tú estás. Muchas personas se casan para llenar los vacíos de soledad y frustraciones. Debes examinar la interpretación de la sociedad con respecto a la soltería versus lo que Dios tiene que decir de eso. Los programas de televisión, las películas, los anuncios, las revistas, los libros, la música; todos retratan la vida soltera como si fuera una enfermedad o una parada en camino a una relación permanente.

Translated Version #7

My biological clock is ticking; I must do something about it. You must turn off that clock because if you do not, you are going to suffer because you are rushing up, and you do not understand that before marrying you need to find your path in life.

Many people get married to fill out void caused by loneliness and frustration. You must examine what society says about bachelorhood versus what God says. TV shows, movies, advertisements, magazines, books, and music show bachelorhood as an illness or a stop in the way of a permanent relationship.

Paragraph #8

Debes tener cuidado cómo permites que el mundo te ministre a ti. Muestran además las implicaciones de un estilo de vida de soltero, como si fuera malo estar soltero; Si estás soltero estás incompleto o eres muy exigente o rígido, eres homosexual o tienes algún tipo de problema emocional en tu vida. Y debes detener todo eso, porque pones sobre ti mucha presión porque te preguntas lo que las demás personas piensan de ti porque no estás casado.

No transformes la institución del matrimonio en un ídolo. No idolatres el matrimonio, porque cuando comiences a idolatrar el matrimonio, vas a comenzar a estar desesperado por eso y la desesperación va a cultivar malas decisiones.

Translated Version #8

You must be careful **on** how **you** let the **world influence you**. **It** shows the implications **of being alone** as if bachelorhood were wrong. **Popular belief claims that if you are single, you are incomplete, demanding, rigid, gay or have some type of emotional problem.** **You** must stop **this way of thinking** because **you** put **so** much pressure on yourself, and **you second guess yourself**. Do not turn **marriage into an idol**. Do not idolize marriage because **if** you do it, **you** are going to feel desperate, and **desperation** will lead you **to make** bad decisions.

Paragraph #9

No idolatres el matrimonio. Dios no te creó para que estés o seas desesperado. No eres una persona desesperada preparándote para tomar malas decisiones. Cuando yo veo el tiempo y la sincronización, veo una secuencia de eventos que están involucrados. En otras

palabras, esto viene ahora, luego viene lo otro y después lo que le sigue a eso, etc. Yo **pienso que hay un gran peligro en ser ignorante en ver la secuencia que está involucrada en los planes de Dios para tu vida y no saber ni conocer esa secuencia.**

Hay ciertas cosas que deben suceder y acomodarse antes **de que** llegues **a ese** tiempo **del** matrimonio.

Translated Version #9

God did not created you to be desperate. **You do not have to get out into the world and make bad decisions when God guides your decisions.** **When I see time and synchronization, I see a sequence of related events.** Some people go through life without recognizing God's will in every event of their lives; a person who follows God, understands that there is a purpose behind every thing that happens to us. **A person needs** to go through certain experiences before **getting married.**

El lado práctico de la soltería

Paragraph #10

Luego **de** estar soltero por 40 años, puedo decirte que he tratado con cada **uno de los** demonios que existe. Es muy incómodo cuando no te has casado, y **las** personas comienzan a sospechar de ti. **Se preguntan si hay algo que anda mal contigo, justo después de que tú hayas comenzado a sospechar de ti mismo.** ¿Hay algo mal conmigo? ¿Soy muy perfeccionista? ¿Porque no le agrado **a la** gente? ¿Porqué no puedo **hacer un** compromiso? **Y las** personas tienen todo tipo de aproximaciones psicoanalíticas, muchos quieren jugar de Cupido y te preguntan porqué no te has casado. Tú no eres que otra persona deok, eres quien Dios **dice que eres.**

Translated Version #10

After being single for 40 years, I can tell you that I have dealt with every existent demon. It is very uncomfortable when you are not married, and people start suspecting the life you lead. You start asking yourself: Is there something wrong with me? Am I too perfectionist? Why don't I like people back? Why I cannot commit? People have every type of psychoanalytic approaches and many of them want to play match maker and ask you why you are not married. You begin to feel uncomfortable because you are not married, but you are not deokd by people but by God.

Paragraph #11

Quiero hablar acerca de mecanismos de supervivencia, modificaciones de comportamiento y el manejo del dolor, porque eso mucho de lo que es la vida. Antes de casarme, todo el enfoque de mi vida era el destino, hacia dónde voy, qué voy hacer con mi vida; estaba enfocado en el destino. Después de que me casé y tuve a mis hijos, comencé a enfocarme en el legado, lo que uno deja. El destino es lo que está en frente tuyo y el legado es lo que dejas atrás. Ahora que estoy enfocado en el destino y en el legado es lo que comienzo a enfatizarme y a pensar en precisión.

Translated Version #11

I want to speak about the survival mechanisms, modifications of behavior, and management of pain because that is what life is all about. Before getting married, all perspective of my life was on my destiny, where I would go, and what I was going to do with my life. After I got married and had my children, I began to focus on my legacy what I was going to leave behind me. Destiny is what is in front of you, and legacy is what is left behind.

Paragraph #12

Viviendo y pensado con precisión, decisión; para ser el mejor **que** yo pueda ser, **para ser precisamente, exactamente y plenamente yo mismo**. No el que actúa para obtener tu aprobación, porque somos muy orientados hacia el rendimiento; **pero** ser **el que** soy porque Dios me hizo y sea **lo que** necesite para que me ayude a encontrar ese lugar, debo abrir mi mente hacia ello. El envejecer es inevitable. El crecer **hacia** arriba es opcional. Muchos **de los** hombres han usado esta escritura para basar **el porqué de** su vida soltera. Debes entender que mucho de **lo que** el apóstol Pablo dijo aquí, era **en** un tiempo en el que él estaba esperando que Jesucristo viniera a la tierra por segunda vez. Así que muchas de las cosas que él dijo eran asuntos urgentes basados **en el que** él estaba esperando la segunda venida del Señor cualquier día; él sentía la urgencia de sacar ese mensaje y eso fue hace 2000 años.

Translated Version #12

Living and thinking with precision and decision to be the best I can be. Not to be somebody who looks for approval because we are very oriented to performance. Being who I am because God made me, and I need to open my mind to find out what I needed from him. Getting older is inevitable but growing up is optional. Many men have used this scripture to base their singlehood on. Thus, many of the things Peter said were urgent matters based on he was waiting for the Lord to come any day. He felt the urgency of passing that message on, but that was 2000 years ago.

10 Sintomas de problemas financieros

Paragraph #13

Querido amigo **y amiga** en este libro Dios te muestra síntomas que te ayudarán **a** identificar si te encuentras **en** problemas financieros y **lo** que está sucediendo en tu vida **en asuntos** económicos, a fin **de que puedas ser** llevado **hacia una** libertad total y una victoria ilimitada en Cristo Jesús.

Primer Síntoma: **Lo** reconocemos cuando tenemos cuentas sin pagar, nos cortan el agua, la luz, el teléfono y empiezan a llegar recibos del diario vivir **en tu casa que** no puedes pagar. Esas bendiciones son las **que** deberías estar disfrutando. Sin embargo, si **te empiezan a cortar la luz, el agua, el teléfono, el celular, etc.,** es el primer síntoma **de** que existen problemas financieros en tu casa.

Translated Version #13

Dear friend, in this boOk God will show you 10 signs that will help you identify if you have financial problems and what is going on in your financial life; therefore, you can have freedom and an unlimited victory in Jesus Christ.

First Sign: We can realize that we have problems when we have unpaid bills, water, power, and phone get cut off, and when there are bills we cannot pay. Running water, power and phone are blessings we should be enjoying. However, if the services are cut off, this is the first sign which shows that you are dealing with financial problems.

Paragraph #14

En este primer nivel, si sabes que en un mes te cortarán un servicio, **el** siguiente mes **lo** pasas bien, pero **al otro te lo** vuelven a cortar, hay **una** clara señal **de** que existe un problema financiero, **lo cual representa** una maldición **en tu vida** que hoy Dios va a quebrantar.

Segundo Síntoma: Cuando estés en este nivel eres incapaz de pagar las cuotas mensuales por los servicios indicados en el primer síntoma. Además, se agrega otro concepto nuevo, empiezan a aparecer pequeñas y pequeñas cuentas sin pagar. Tal vez, hasta ahora te percatas que no puedes pagar ese montón de deudas pequeñas en este momento y surge una gran idea la de aquel amigo que te recomienda que saques un gran préstamo en el banco para que canceles todas esas cuentas pequeñas, con un plazo de pago más largo y con una mensualidad más baja.

Translated Version #14

In this first level, if you know that in one month a service will be cut off, next month you are ok, but if the service is cut off again, there is clear evidence that shows a financial problem and this is a modern life curse that God will break.

Second Sign

When you get to this level, you are not capable of paying your monthly bills. Furthermore, a new concept is added small unpaid bills. Perhaps now you realize that you cannot pay those great amounts of small debts, and a friend comes up with the idea of getting a loan to pay all those small debts over a longer period of time and smaller monthly fee.

Paragraph #15

A simple vista, esa pareciera ser la gran solución a este problema, pero esa es una mentira de Satanás, porque el aspecto de las deudas y de las cuentas por pagar, así como todo lo que tiene que ver con el campo económico es un asunto espiritual.

Muchas veces hemos creído que solamente la oración es espiritual, o la fe es espiritual o el ayuno, pero no nos damos cuenta que los asuntos financieros son tan espirituales para Dios como son los otros. No en vano 18 de las 36 parábolas de la Biblia hablan acerca de temas económicos, 288 veces en el nuevo testamento, 2.200 veces en toda la Biblia, mientras que la fe se menciona aproximadamente 800 veces, la oración 650.

Translated Version #15

At first glance, this seems to be a great solution for this problem; however, that is a lie from the very devil because your debts and everything within your economical life has to do with the spiritual realm.

Many times we have believed that praying, having faith, or fasting are spiritual but we do not realize that financial matters are spiritual too. Not by accident, 18 of 36 Bible parables speak about financial matters; for example, 288 times in the New Testament and 2,200 times in the whole Bible while faith is mentioned around 800 and praying about 650 times.

5.1.3.1 Glossary from English into Spanish

As previously mentioned, glossaries are important for any translator even for the most experienced ones. This instrument assisted the researcher to have a better understanding of unknown and complex terms found in the translations; furthermore, the definitions helped the researcher to know the function of specific words and this provided more accuracy to the texts. These are the glossaries created for this specific study:

5.1.3.1 Glossary from English into Spanish

| Term/phrase | Category(N,V, Adj, Adv) | Definition | Synonyms/Equivalent | Translation |
|--------------------|--------------------------------|--|-----------------------------------|-----------------------------------|
| AC | Noun | Alternating Current | Corriente Alternativa | Corriente Alterna |
| Alloy | Noun | a metal that is made by mixing two or more metals, or a metal and another substance | Aleación | Aleación |
| AWG | Noun | American wire gauge | Calibre de alambre estadounidense | Calibre de alambre estadounidense |
| Asbestos | Noun | A soft, grey-white material that does not burn easily, used in the past in building | Asbesto | Amianto |
| Blistering | Adjective | the act or an instance of forming a blister or blisters. | Formacion de ampollas | Formacion de ampollas |
| Breakdown | Noun | An analysis or classification of something; division into parts, categories, processes, etc. | Ruptura | Descomposición |

| | | | | |
|----------------|------|--|-------------------|-------------------|
| Ballast | Noun | a device, often a resistor, that maintains the current in a circuit at a constant value by varying its resistance in order to counteract changes in voltage. | Balasto | Balasto |
| Bearings | Noun | Machinery. the support and guide for a rotating, oscillating, or sliding shaft, pivot, or wheel. | Rodamientos | Cojinetes |
| Branch circuit | Noun | Branch circuits send power to outlets, lights, washers, dryers and other appliances | Circuito derivado | Circuito derivado |
| Burning out | Noun | to undergo rapid combustion or consume fuel in such a way as to give off heat, gases, and, usually, light; be on fire: | Combustión | Combustión |

| | | | | |
|-----------------|------|--|--------------------|--------------------|
| Circuit breaker | Noun | a safety device that stops the flow of current in an electrical circuit when there is a fault | Disyuntor | Interruptor |
| Char | Noun | turn black by fire or heat | Residuo | Residuo |
| CC | Noun | Corriente Continua | Corriente Continua | Corriente Continua |
| Draw | Noun | pull out something | Consumo | Consumo |
| Damp | Noun | slightly wet, usually in a bad way | Humedad | Humedad |
| Debris | Noun | the remains of anything broken down or destroyed; ruins; rubble: | Escombros | Residuos |
| Drywall | Noun | dry material usually in the form of prefabricated sheets or panels nailed to studs, as distinguished from one that is plastered. | Panel de Yeso | Panel de Yeso |
| DC | Noun | Direct current | Corriente Directa | Corriente Directa |

| | | | | |
|----------------------|-----------|---|---------------------------|---------------------------|
| Gross | Adjective | large, big, or bulky. | Grande | Amplio |
| Insulation | Noun | Material that is used to stop heat, sound, or electricity from escaping or entering | Protector | Aislante |
| Interlock | Noun | To fit into each other, as parts of machinery, so that all action is synchronized. | Interbloqueo | Engranaje |
| Incandescen t | Adjective | intensely bright; brilliant. | Incandescente | Incandescente |
| Lead acid battery | Noun | N/A | Batería de plomo ácida | Batería de plomo ácida |
| Lampholder s | Noun | an electric lamp socket | Portalámparas | Portalámparas |
| Leg | Noun | a long, narrow support | Superficie | Superficie |
| Leach | Verb | action of water passing through the material | Traspasar | Filtrar |

| | | | | |
|--------------|-------------|---|---|---|
| Moisture | Noun | very small drops of water in the air or on a surface | Humedad | Humedad |
| Molten | Adjective | (of a solid) in a liquid state, having been melted | Fundido | Fundido |
| Melt away | Prep phrase | to disappear slowly | Desaparecer | Desvanecer |
| OCPD | N/A | Overcurrent Protection Device | Dispositivo de protección contra sobrecorriente | Dispositivo de protección contra sobrecorriente |
| Overlook | Verb | to not notice or consider something | Ignorar | Pasar por alto |
| Power strips | Noun | Item to connect many objects | Enchufe Multiple | Regleta |
| Prompt | Verb | to move or induce to action | Inducir | Impulsar |
| Prima Facie | Adverb | at first appearance; at first view, before investigation. | Indicios | A primera vista |

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|------------|------|--|----------------------------|--------------------|
| Pyrolysis | Noun | Pyrolysis is a thermo chemical decomposition of organic material at elevated temperatures in the absence of oxygen (or any halogen). | Pirólisis /descomposició n | Pirólisis |
| Plate | Noun | a flat piece of metal inscribed with eg a name, for fixing to a door, or with a design etc, for use in printing. | Chapa | Placa |
| Receptacle | Noun | the place on a wall where you connect electrical equipment to the electricity supply | Tomacorriente | Tomacorriente |
| Recondense | Verb | to make (a liquid) thicker, stronger or more concentrated | Volver a condensar | Volver a condensar |
| Rag | Noun | a worthless piece of cloth, especially one that is torn or worn. | Paños | Trapo |

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|-----------|-----------|--|-----------------|-----------------|
| Range | Verb | the amount or number between a particular set of limits | Oscilar | Variar |
| Subtle | Adjective | Faint or delicate in quality | delicado | Sutil |
| Socket | Noun | the place on a wall where you connect electrical equipment to the electricity supply | Tomacorriente | Tomacorriente |
| Soak | Verb | to make something very wet | Mojar | Remojar |
| Sever | Verb | to break or separate, especially by cutting | Partir | Cortar |
| Sine wave | Noun | A sine wave or sinusoid is a mathematical curve that describes a smooth repetitive oscillation | Onda Sinusoidal | Onda Sinusoidal |
| Span | Verb | the period of time that something exists or happens | Longitud | Extensión |

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|-------------|------|---|---------------------|-----------------------------|
| Slip Ring | Noun | a metal ring, usually of copper or cast iron, mounted so that current may be conducted through stationary brushes into or out of a rotating member. | Anillo Rozante | Anillo Deslizante |
| Switch | Noun | a small object that you push up or down with your finger to turn something electrical on or off | Interruptor | Interruptor |
| Stall | Verb | If an engine stalls, or if you stall it, it stops working suddenly. | Estancamiento | Estancamiento |
| Shaft | Noun | a revolving bar transmitting motion in an engine | Eje | Eje |
| Shades | Noun | window shade. | Persiana | Persiana |
| Sewer pipes | Noun | a pipe used to carry waste matter such as faeces or dirty water from | Tuberías de drenaje | tuberías de alcantarillados |

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|------------------|-----------|---|--------------|-----------------|
| | | homes and factories | | |
| Substantiate | Verb | to establish by proof or competent evidence: | Corroborar | Justificar |
| Service entrance | Noun | N/A | Acometida | Acometida |
| Tenant | Noun | an occupant or inhabitant of any place. | Arrendatario | Inquilino |
| Trip | Verb | To active | Encender | Activar |
| Unintended | Adjective | Not expected or planned | Indeseado | No deseado |
| Uneven | Adjective | irregular; varying; not uniform: | Disparejo | Irregularidades |
| Windings | Noun | a symmetrically laid, electrically conducting current path in any device. | Bobinas | Bobinas |

| | | | | |
|-------------------|------|-----|-------------------|-------------------|
| Zinc-plated steel | Noun | N/A | Acero galvanizado | Acero galvanizado |
|-------------------|------|-----|-------------------|-------------------|

5.1.3.1 Glossary from Spanish into English

| | | | | |
|----------------|-------------|---|---------------------------------|-------------|
| Alinear | Verb | Vincular una persona o un colectivo a una tendencia ideológica, política o de otro tipo. | Ordenar | Align |
| A simple vista | Noun phrase | Algo que logra ver con facilidad | Se logra percibir con facilidad | At a glance |
| Ayuno | Noun | Privación total o parcial de comida y bebida durante un tiempo, generalmente por motivos religiosos o de salud. | Abstinencia/ Dieta | Fast |
| Avaricia | Noun | Afán de poseer muchas riquezas por el solo placer de atesorarlas sin compartirlas con nadie. | Codicia / ambición | Greed |
| Carga | Noun | Obligación, situación penosa, esfuerzo, sufrimiento, etc., que recae | Obligación/ Molestia | Burden |

| | | | | |
|----------------|-------------|--|--------------------|-------------------|
| | | sobre una persona, especialmente cuando se siente como excesivo. | | |
| Caer del cielo | Verb Phrase | Phrase which means that a person will receive something easily | N/A | Fall in the hands |
| Comedido | Adjective | Que es moderado, no exagerado, agresivo ni irrespetuoso. | moderado, mesurado | Measured |
| Carácter | Noun | Conjunto de rasgos, cualidades o circunstancias que indican la naturaleza propia de una cosa o la manera de pensar y actuar de una persona | Temperamento | Temper |
| Desalentar | Verb | Quitar [cierta cosa] el ánimo o la energía a una persona para proseguir una lucha o una empresa | Desanimar | Discourage |
| Diacono | Noun | Persona que tiene entre sus funciones | N/A | Diaconate |

| | | | | |
|-------------|------|--|--------------------------|---------------|
| | | anunciar el Evangelio, bautizar, asistir al sacerdote en el altar, distribuir la comunión | | |
| Deudor | Noun | [persona] Que debe una cosa o está obligada a satisfacer una deuda. | Prestatario | Borrower |
| Discipulado | Noun | Conjunto de discípulos de una escuela o de un maestro. | N/A | Discipleship |
| Esclavitud | Noun | Condición de esclavo | Servidumbre | Bondage |
| Llavero | Noun | Utensilio pequeño para llevar las llaves guardadas o recogidas. | Aro | Keychain |
| Matriarcal | Noun | Del matriarcado o relacionado con él. | N/A | Matriarchal |
| Megalómanos | Noun | Megalomanía es un estado psicopatológico o caracterizado por los delirios de grandeza, poder, riqueza u omnipotencia | Fantasiioso/ Vanidoso | Megalomaniacs |
| Ministrar | Verb | Otro significado de | Dar | To Minister |

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|--------------|-----------|---|-------------------------|-----------------|
| | | ministrar en el diccionario es dar, suministrar a alguien algo. | | |
| Mayordomo | Noun | Encargado de la administración de los gastos de una cofradía religiosa y de su funcionamiento | Administrador/encargado | Steward |
| No en vano | Adjective | Hacer algo con esperanza | infructuoso | Not by accident |
| Precipitado | Adjective | Que hace o dice las cosas de manera rápida o con mucha prisa y sin pensar en las consecuencias. | Atolondrado/Impulsivo | Hasty |
| Paupérrimo | Adjective | Superlativo de <i>pobre</i> . | Pobreza extrema | Extreme Poverty |
| Pesebre | Noun | Establo donde se coloca este recipiente. | Establo | Crib |
| Presupuestar | Verb | Hacer el presupuesto de una actividad. | Calcular/Evaluar | To Budget |
| Palabrería | Noun | Abundancia de palabras sin sustancia ni utilidad. | Labia | Hot air |
| Privarse | Verb | Renunciar voluntariamente a algo | Despojar | Forego |

| | | | | |
|-----------|-----------|--|------------------------|--------------|
| | | agradable o útil, generalmente por necesidad. | | |
| Patanes | Adjective | el término se aplica a quienes son brutos o groseros y tienen comportamientos que pueden calificarse como bárbaros. | Grosero | Louts |
| Rocío | Noun | Vapor de agua de la atmósfera condensado en forma de gotas muy pequeñas durante el enfriamiento nocturno o de madrugada. | Humedad | Dew |
| Reprender | Verb | Reñir a una persona o expresar de forma autoritaria y severa desaprobación a causa de su actuación o su comportamiento. | Exhortar/ Amonestar | Reproach |
| Soltería | Noun | Estado civil de la persona que no se ha casado. | Celibato | Bachelorhood |

| | | | | |
|--------------|------|--|-------------------------|---------------|
| Servilletero | Noun | Utensilio, generalmente en forma de aro, que sirve para guardar una servilleta enrollada. | N/A | Napkin holder |
| Síntomas | Noun | Conjunto de cosas relacionadas entre sí o con ciertas características comunes, que están o se suceden unas a otras siguiendo un orden. | Indicio/señal | Signs |
| Serie | Noun | Conjunto de cosas relacionadas entre sí o con ciertas características comunes, que están o se suceden unas a otras siguiendo un orden. | Sucesión/ Progresión | Sequense |
| Versículo | Noun | División de frases establecida en los textos sagrados. | Parágrafo/ Frase | Verse |
| Vestiduras | Noun | Prenda que en actos solemnes se lleva encima | Vestido | Robes |

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|--|--|-------------------------|--|--|
| | | de la ropa ordinaria | | |
|--|--|-------------------------|--|--|

Chapter VI

Conclusions and Recommendations

The main idea of this chapter is showing the bridge between the objectives and the results. The investigator will show the purpose of the conclusions, their importance, and different results according to the specific objectives mentioned before in Chapter I.

Moreover, some recommendations are going to be given to help future translators to focus on certain elements that can be improved, such as glossaries and the translations themselves and how to be more time-handling effective.

6.1 Purpose of the Conclusion

In order to finalize the research, the investigator will show different conclusions that have been found. This chapter will bind the objectives of the investigation with the results obtained after applying different methods of translation. Basically, the purpose of a conclusion is to provide a bridge between the objectives and the results. This bridge will help readers understand the importance of the investigation; moreover, they will read what the main issues, connections, and points were, and if the investigator was able to accomplish the objectives successfully.

6.2 Conclusions

6.2.1 Specific Objective #1

- *To translate the documents 12 Steps to Change, 10 Signs of Financial Problems, I am Alone and that is Fine, and The Practical Side of Singleness from Spanish into English for Centro de Excelencia Church and Manual of the Costa Rican Fire Corps from English into Spanish*

This objective was achieved by analyzing the texts translated. The study of the background through the internet, books, and personal experience helped a lot to be familiarized with the vocabulary and intention of author. One of the main advantages is that the investigator belongs to Centro de Excelencia Church, so regarding the texts of the church, the investigator felt comfortable because he was familiarized with contexts and vocabulary. On the other hand, for the text Fire Investigations, the researcher had to make a lot of research in order to understand the technical vocabulary.

General and close readings gave the advantage of discovering what the main issues of the texts were, and the possible solutions to solve those situations such as applying different methods of translation without losing the aspects of naturalness and accuracy.

The texts translated were read many times to clarify the grammatical aspects that all documents should have according to the target language; for instance, a good coherence, cohesion, and punctuation to prevent any misunderstandings or wrong interpretations.

6.2.2 Specific Objective #2

- *To apply various translation techniques to the documents to achieve communicative texts.*

To achieve this second objective successfully, there was a deep study of the translations. The investigator had to use different translations techniques to achieve the goal of rendering communicative texts; furthermore, in the research different authors, theories, and point of views were cited to support these procedures and show the importance of using them correctly.

To achieve communicative translations, the investigator applied six different procedures, which were Transposition, Modulation, Amplification, Explicitation, Literal translation, and Omission. These procedures were used based on the need of the translator and none of them were forced. They were applied according to the naturalness and precision the texts needed.

These translation techniques applied were a combination of the professional criterion of the investigator, and the information learned in class. For example, the investigator had to decide in the color coding which was the best procedure to choose because when analyzing the paragraphs, the investigator found two or more procedures in the same sentence.

6.2.3 Specific Objective #3

- *To evaluate the effect of the translation techniques applied on the documents.*

The effects of the techniques applied in the translations are clearly shown and reached because of the fact that applying these procedures affected the texts by providing naturalness and accuracy; for example, in the texts that belonged to Centro de Excelencia Church, one of the effects reached was the element of naturalness due to the fact that with a good quantity of transpositions and modulations were used so the texts sounded natural and thus could be able to fulfill one of the main purposes of translations, which is the invisibility of the translator, since the reader should not even notice texts were translated.

A second effect in these church texts is that it helped to recognize and conveyed what the preacher wanted to say. Procedures such as modulation were a useful tool to convey the real meaning of the texts and it preserved the accuracy and informative purpose of the translation.

On the other hand, the investigator worked on the document of the Manual of the Costa Rican Fire Corps to render a communicative, natural and, accurate target text. This technical document is more different than the ones mentioned before because the prevalent procedures were transposition and Literal Translations. Transpositions helped to give naturalness and the literal translation, even though it is a controversial procedure, was helpful to inform what the basic fire causes were, thus giving the precision required on a technical text. In texts like this, the main idea is informing over conveying a message.

6.2.4 Specific Objective #4

- *To create a glossary with the most relevant terminology found in both texts.*

The importance of a glossary has been stressed since the very beginning of the investigation. A glossary is a translator-created tool in which the investigator places unusual words and their specific meaning according to each text, as it was aforementioned.

This tool was useful ever since it helped the researcher to give the texts their specific emotional tone and correct meaning in the case of the church texts.

On the other hand, for the technical text of Manual of the Costa Rican Fire Corps, the glossary helped to understand the correct meaning of the words, and also the function of those words within electrical information. Knowing the function of the word in the appliance helped the investigator translate with accuracy and confidence. Different elements were used in the glossary to achieve this objective such as meanings, definitions, synonyms, and others.

6.3 Restatement of the Research Question

The present investigation aims to provide an answer to the following question:

What is the effect of the procedures and methods used to translate the documents *12 Steps to Change*, *10 Signs of Financial Problems*, *I am Alone and it is Ok*, and *The Practical Side of Singleness* from Spanish into English for Centro de Excelencia Church and *Manual of the Costa Rican Fire Corps* from English into Spanish for Costa Rica Distinguished Fire Corps ?

Basically the effects of the procedures applied in all texts reached the main purpose of translations, which was to give the naturalness and accuracy that the texts needed to keep the reader from noticing the texts went through a translation process. Moreover, its purpose was to express the same feeling and meaning in the specific case of the church translations, as the investigator was focused on expressing the exact meaning of the message the preacher wanted to convey.

For the text of *Manual of the Costa Rican Fire Corps*, the effect was different because it was not focused on expressing a specific feeling due to the fact that this text was technical and it was for people educated on this specific field. The effects affected the text to express the same information with precision and naturalness. However, as it was mentioned before, this type of technical texts contain a lot of formality; consequently, the researcher decided to use several translation procedures and a factual emotional tone in order to render the exact meaning that the author of the text intended

6.4 Unexpected Results

One of the unexpected results is that the document of *Manual of the Costa Rican Fire Corps* forced the researcher to use literal translation often. The reason of this procedure was the nature of the document, and the level of difficulty that document had. Technical texts do not allow expressing or interpreting a message due to the fact that the emotional

tone is factual, they contain more formality than most texts, and they follow a specific pattern.

6.5 Recommendations

The researcher has multiple recommendations for future translators who want to continue with the investigations and provide successful results.

One of the main recommendations is to keep in mind that the glossary is a powerful tool for any type of translator even if the person is an expert. The glossary will help the translator to have a better understanding of what is being translated, and it also will enrich their vocabulary giving the opportunity to save time instead of looking for every word in the dictionary.

Another recommendation is to read the texts to be translated with anticipation. This will help to have a better understanding of the text proving a huge advantage to the translator to find out what the main issues are and what could be the best solutions to solve the challenges that any translator will have. Moreover, this will save a lot of time while doing the corresponding research.

A third recommendation is to read a lot. This will give the advantage of having good vocabulary, fluency to express the information correctly in different ways causing the translation to look natural to the reader, and also a mental picture of what a natural text looks like, since as stated before the best translation is the one that goes unnoticed.

A final recommendation is to identify through a general and close reading which type of translation the translator is going to work on. This piece of recommendation will help a lot because with it translators will be able to choose the correct vocabulary and emotional tone the texts call for.

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Appendix