CREATING A MASS NOTIFICATION PLAN

Executive Analysis of Fire Service Operations in Emergency Management

Creating a Mass Notification Plan

for the

Saint John's Fire Department

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CERTIFICATION STATEMENT

I hereby certify that this paper constitutes my own product, that where the language of others is set forth, quotation marks so indicate, and that appropriate credit is given where I have used language, ideas, expressions or writings of another.

Signed:_____

ABSTRACT

In the past, Saint John's University was limited in the ways that important information such as potential life threatening emergencies were relayed to the campus community. This research project intended to create a mass notification system for the SJU campus, the action research method was utilized. The questions answered in this paper are:

1.) What do other colleges use to inform their campus communities when an emergency is occurring?

2.) What types of warning systems are available for college campuses?

3.) How do colleges communicate their building evacuation plans to their campus communities?

After consulting and interviewing SJU security and two separate alarm employees, and reviewing periodicals, a well-organized plan was developed that can be utilized throughout the campus.

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GLOSSARY

Found in Merriam-Webster online:

1. **MNS:** Mass Notification System.

2. **I.T.:** Information technology.

3. **NFPA:** National Fire Protection Association.

4. **OSHA:** Occupational Safety and Health Association.

5. **ADA:** Americans with Disabilities Act.

6. **U.L.:** Underwriters Laboratory.

7. **Tactile:** Perceptible by touch.

8. **Integral:** Essential to completeness.

9. **Cognizant:** Knowledgeable of something especially through personal experience.

10. **Infrastructure:** The underlying foundation or basic framework (as of a system or organization).

11. **Influx:** A coming in.

12. **MNIACLEA:** International Association of Campus Law Enforcement Administrators.

13. **PDA's** Personal Digital Assistant.

14. **Factions:** A party or group (as within a government) that is contentious of self-seeking.

15. **Myriad:** A great number.

16. **Intricacies:** Having many completely interrelating parts or elements.

17. **Communal:** The people with common interests living in a particular area.

INTRODUCTION

Saint John's University (SJU) currently has a limited mass communication system on campus and therefore the community as a whole is not always aware of potential emergencies that could occur. The university has relied on what is currently on-site for communicating emergency situations to their employees, students, visitors and monastic members. This system is not all-inclusive and therefore messages sent out to the entire campus community, do not always reach the intended recipients. In an emergency situation this could mean that anyone who lives, works, attends school and visits here could become caught in a very dangerous situation and could possibly be injured or killed.

The purpose of this research project is to come up with a plan to create and implement a mass notification warning system and a time frame for implementation of that system. This mass notification system will be used to communicate to the entire Saint John's Community any emergency situation that may occur on campus at any time of the day or night, weekend or holiday.

In order to complete this project the action research method was applied so that a mass notification plan could be created. This plan would allow the administration to effectively communicate to anyone who may be on campus during an emergency situation.

This research project used the action method to answer the following questions:

1.) What do other colleges use to inform their campus communities when an emergency is occurring?

2.) What types of warning systems are available for college campuses?

3.) How do colleges communicate their building evacuation plans to their campus communities?

BACKGROUND AND SIGNIFICANCE

In the past Saint John's University has had limited capabilities of communicating emergency messages to the on campus community. The campus is unique in the sense that there is a wide variety of people located on the campus in a single day. On a regular day the community at SJU consists of their employees, staff, monastic members and visitors. The administration and safety personnel at SJU are responsible for the well-being of those people on campus. In the event of an emergency and/or critical situation, the university must have an effective way of notifying all members of the community. The security department is in charge for mass communication on campus. It has been noted that the system currently being used is not efficient enough. Presently, the university utilizes a mixture of e-mails, phone trees, outdoor warning sirens, local cable T.V. channels, and word of mouth to relay their messages. Due the ineffective nature of the system in place, a new mass notification system is needed.

In the most recent past, the security staff at SJU has not been able to communicate to the entire community the situations that have occurred. Not only has this placed the university in a very compromising position, it has also generated a large amount of negative feedback from individuals who have been present on campus during these situations. The reason for this lack of communication is that there is no formalized mass communication system on campus. Therefore, when an emergency occurs or is about to occur, the message they need sent out does not reach all of the intended recipients.

With the recent occurrences here on campus and also on other campuses, the SJU administration has realized that what they currently have in place, is not sufficient when

attempting to communicate with their entire campus community. Therefore they realize they need to come up with a more all-inclusive mass notification system for the entire campus. In order to ensure the safety of all individuals on campus, the SJU administration and safety personnel need to have the ability to communicate to all members of the campus community no matter their location, or time of day.

Saint John's University is well-known for their dedication to their community members and academics. The university has upheld the status of a prestigious college by placing a strong emphasis on the safe communal environment that is present on campus. The SJU administration realizes that if this standard is not upheld, they could potentially see a decrease in enrollment, and lose their credibility as a safe campus.

The university cannot afford to let this happen. A decrease in enrollment would inevitably affect more than just the attendance in classrooms. Funding and budgeting is maintained through student enrollment. Without the projected number of students on campus, the university would not be able to continue operating in the current fashion. A decline in attendance would be a detriment not only to SJU, but also the surrounding communities. Students and employees help to generate a large amount of economic stability within the county through their extracurricular activities and standards of living. Therefore, the university cannot afford to place the lives of their campus community members at risk with an inadequate mass notification system.

With the current mass notification system in place, they realize they may be opening themselves up to possible litigation if a disaster were to strike the Saint John's campus. An inadequate system will not ensure that critical information will reach all of the intended recipients, potentially resulting in a serious injury, or death.

This paper is being written to fulfill the applied research requirement for the Executive Analysis of Fire Service Operations in Emergency Management class in the National Fire Academy's Executive Fire Officer Program. When this research project is completed, SJU will have a written Mass Notification Plan for the university. This will enable SJU to continue to operate as a first class institution of higher learning, and also provide the necessary communication systems which will be used to communicate to all people, no matter their location on campus.

LITERATURE REVIEW

The literature review was completed by gathering information from the locations listed below:

1. The Learning Resource Center at the National Emergency Training Center in Emmitsburg, Maryland.
2. The Fire/EMS/Safety Center Library located at Metropolitan State University in Saint Paul, Minnesota.
3. The Saint John's Fire Department Fire Training catalog library.
4. The Internet.
5. Interview with two separate alarm company representatives.
6. Interview with Security Chief of Saint John's University.

While the researcher was reading through articles he found that there are a number of standards that need to be followed when creating a mass communication system. MadahCom (2007) gives the following requirements as far as standards go for the installation of a Mass Communications System. One of which is OSHA 1910.165 which states "employers that use an alarm system to provide warning for necessary emergency action must follow this standard," (¶ 3). The second standard is NFPA 72, Annex E Mass Notification Systems. This standard covers the instructions that will be given by the MNS (Mass Notification System), how they are to be given and provides suggestions for other ways to communicate to the business community (¶ 4). Grill, (May/June) 2007 informs us that the NFPA has added this new annex to the NFPA 72 standard that specifically covers MNS systems (p. 84). The third standard is the ADA Standard. This standard talks about synchronizing the audio and visual message

transmissions through multiple avenues. Since SJU does have students, staff and faculty working and living on campus, following the ADA standard will be critical in the creation of the universities mass communications system (¶ 8). Colombo, (March/April 2006) also stated "all life safety-connected systems must meet UL-864, 9th Edition," (¶ 11). Therefore, all of the information listed above gives the university a solid starting point in the process of creating a MNS. The university must make sure to follow all standards when they are deciding upon the type of system that will be installed on campus.

Found in an article for e2 campus.com was a statement that read, we need to understand that 90% of college students have cell phones. It states "if you're not reaching students' cell phones, you're not reaching them". This gives a very important picture of what the current culture is for the students that reside on the campus, administrators need to be cognizant of this fact when they are in the process of creating a MNS system for their campuses.

Almand (2007) advised that consideration should be given for the use of alternate means of notification such as, visual and tactile systems. She also stated "understanding the perceptions and behavior of building occupants is essential to improving the effectiveness of notification systems"(p.34). This would prove to be an important factor to remember when building your MNS since it could have serious affects upon not only the university but also the overall community they are trying to communicate to.

Industrial Fire Journal (Dec. 06 Jan. 07) suggests that another part of your MNS could be directional sound evacuation sounders which give people a clear audible guidance to their nearest exit (p. 32 & 34). In a large building which you generally find

on many college campuses, this would be a very integral part of the system, this would assist the evacuees giving them directional assistance when leaving the building.

Sako (2007) says “there are eight steps that should be followed when building your MNS”.

1. Analyze the threats to the facility and it’s occupants.
2. Gather input on how your facility operates on a daily basis.
3. Develop an Master Plan.
4. Design the Mass Notification System.
5. Develop an emergency action plan.
6. Create a phased implementation.
7. Train staff and conduct drills.
8. Conduct periodic system reviews. (p. 45 & 46)

In breaking these eight suggestions down we find under the first one that you need to find the strengths and weaknesses in your organization. You also will be able to determine where the most likely places are in your organization that an incident are to occur. Once you know those two pieces, you can start to create your strategy to build the system for your facility. In the second evaluation piece you are looking at your facility and breaking down such things as what types of communication systems that are currently in place, how up to date are they, how many security personnel do you employ on each shift, how are they trained as far as emergency evacuation is involved and what type of emergency response procedures do you currently have in place within your facility. The third piece may be the most important step of the eight, you need to review what you have found after completing steps one & two, once this is completed you can

decide how you will proceed from that point on. You need to make sure you meet your immediate needs while also preparing for the future and growth of not only your organization, but also your manpower. Part of all this is to also make sure what you set out to install, will be the most cost effective for your organization. The fourth piece is to design your system so that it communicates to all those you wish to reach. Whether they are in doors or outdoors, by telephone, computer, radio, sign board or any other method. You must decide what the avenues are that you are planning to communicate to your people and then build your system to cover each and every separate avenue. The fifth piece is something that spells out each separate situation and then lays out a plan to deal with them on a case by case basis. This document should cover every separate part of your organization and should be communicated to and tested with each. Under the sixth piece you need to make sure the plan you create is workable and agreed upon by the facilities administration. You also need to make sure the budget and time table for installation are workable and agreed upon in advance. The seventh piece is to make sure you train and conduct drills with each separate part of the organization. The plan does no good if it doesn't work in an emergency situation and therefore, you need to test it and evaluate it on a yearly basis. The training is also critical with the staff since they will play an integral part of the implementation of the plan if an emergency occurs in your facility. The last piece is to make sure the performance of the system is what you envisioned it to be when you started the process. This will also allow you to continually re-evaluate the threats and or incidents that could occur in your facility and up-grade your system to meet those findings.

Stuver, Keene, Carlisle (2004) the authors have a number of suggestions as to what the customer needs to look at while they are trying to decide what type of system best fits their location. They have six different areas to closely scrutinize:

1. "Who operates the system?"
2. "Is the system designed to contact the people you need to reach?"
3. "Is the system scaled to your current needs and scalable to your future needs?"
4. "Is the system completely reliable?"
5. "How flexible is the system?"
6. What is it's pricing structure?" (p. 2)

The first piece will be very critical since if it is an outside company what types of controls will you have with programming, notification, messages sent and updating of the system. If you are going to run the system yourself, can it be done efficiently and or do you have the communication structure set up to run it? The second piece is also very critical since if it isn't reaching the desired recipients, the system will not be operating as you need it to and that would be critical in an emergency situation. The third piece is if we don't have a system that will work with our current system and needs, then what good is the system. We also have to be very cognizant of the ability of the system to build out for future use. As the university grows, the system needs to also grow with it. We need to find what fits best for us here at St. John's. The Fourth piece is that no matter what we put in, will it be completely reliable? Once again we need to research what will work best for us. If we don't have the communication infrastructure, do we have the administrations guarantee that they will build it for us, or is it better to go off campus for the system? Number five asks how flexible is the system? This is critical since with a

large organization, the system needs to be able to work with our current infrastructure. If it isn't flexible enough to do this, then we should be looking at a different system that fits our needs more closely. The last piece is the most important since if the system is too expensive to install, run and maintain, the administration will not likely support it. We need to find something that is affordable but also works with what we currently have here on campus. That is the only way to build a system that all users will approve of.

InstaCom Campus Alert, advises that when putting your MNS together, you should make sure the system has the ability to "require a confirmation message or acknowledgement from each recipient." It also states that it is a good idea to have a the ability to "re-broadcast a communication message to only those who did not confirm the message," (p.1). The system should also be able to try multiple types of notifying people, don't depend on one communication method. The more methods, the greater the probability of reaching everyone. We should try to find a system that can send a message in more than one method at the same time.

Gwynne (2006) suggests that there should be "training to ensure that the population is aware of what they should do in times of emergency." He also states "deployment of trained and assertive staff to assist evacuees and manage the overall evacuation process." (p. 63) Both of these statements are critical when training on your MNS. If people do not know what to do when an emergency occurs, the MNS system may confuse or disorientate them. On the other hand, if they have trained staff available to guide them to what they need to do in a specific situation, it is a proven fact, that they will follow the direction given to them by those people.

The researcher also interviewed two experts whom work in the alarm system field and one who is the current security director at St. John's University. The summary of the interviews are as follows: The two security experts stated that at this time they are not seeing an influx of requests by colleges or universities for the installation of mass communications systems. The only thing they are noticing is an increase in requests to install cameras in the State of Minnesota school systems. They did however inform the researcher that they do have the technology and ability to install many different types of mass notification system pieces and can either run the system through their people, or help the customer set up a system that can be run by their own I.T. people. They also wanted the researcher to know that if a company were to set up their own system to be run by their your own I.T. people, they better realize the amount of liability they will be incurring by doing this. The customer should also realize the amount of maintenance and up-keep the system takes, the programming time for messages each time they change them, and the training their people need to have so that the system works as it was designed no matter what the time of day, or day of week an emergency may occur.

The interview with the security director was informative as to what other colleges in Minnesota were working on and already had on campus compared to what St. John's currently has. He informed the researcher that most colleges are using text messaging, e-mail, local cable channels, outdoor warning devices and word of mouth to get the information out to the members of their colleges. St. John's is currently using e-mail, word-of-mouth, outdoor warning sirens, local cable T.V. channel and phone calling trees. He stated that he understands that what he currently has in place is not sufficient and he is in the process of looking into how to upgrade the system on campus.

PROCEDURES

To fully analyze the stated problem and fulfill the purpose statement, interviews were held with Michael Hagen sales and service representative of Floyd Security located in Bloomington, Minnesota, and Kevin O'Neil, Enterprise Account Executive of Securitas Systems located in Maple Grove, Minnesota, and Shawn Vierzba Security Director at Saint John's University located in Collegeville, Minnesota. The interview with Mike Hagen was conducted at his office in Bloomington, Minnesota on November 20th 2007 at 1:30 PM. The interview with Kevin O'Neil was conducted at the office of the St. John's fire department located in Collegeville, Minnesota on November 15th at 8 AM. The final interview was conducted with Shawn Vierzba on November 23rd in his office at life safety services at Saint John's University located in Collegeville, Minnesota at 2 PM.

The researcher analyzed the data received by the three interviewees along with the data he had collected from the articles listed in the literature review section of the paper. He then broke it down into useful information and non-useful information. The useful information was used to help him decide what he had to do to come up with a workable MNS plan for the university. He also used the gathered information to assist him in what to look for in each piece of the system and how to overcome issues regarding each part of the system as they would pertain to the finished product.

LIMITATION

The researcher for this applied research paper has identified the following limitation: Due to the relatively new push on Mass Notification Systems, in the college system, there was limited information as to what most colleges the size of SJU, located in the central part of the country are currently using to notify their campus populations.

RESULTS

The researcher obtained a great deal of information from a number of sources while conducting his research for this project. The first question he asked others was: "What do other colleges use to inform their campus communities when an emergency is occurring"? Security Director Shawn Vierzba of St. John's, (who is also the president of MNIACLEA) informed the researcher that most of the state colleges are using a number of different notification avenues as their MNS. The avenues used are text messaging, e-mails, local cable T.V., outdoor warning devices and word-of-mouth. He also stated that each college is not using all of the above avenues, but a combination of all mentioned.

The second question asked "What types of warning systems are available for college campuses"? United Facilities Criteria (2002) suggests using a Giant Voice System which is a siren that also has voice message capabilities (p. 2-2). This is used for warning people while they are outside of a structure and or in a temporary buildings somewhere out of the normal flow of traffic. The reason for not using this type of a system inside a building is that the voice clarity does not work very well inside structures. Shawn Vierzba, has also stated that most colleges use outdoor sirens for notification and that on the SJU campus, this system does not have the ability to run voice pre-recorded messages through it at this time. In the interview with Mike Hagen, he also stated that they do have the ability to install strobes on the outside of buildings to alert people who may be outside and may also be hard of hearing that there is an emergency occurring. He stated that not too many people are looking at that type of warning device since they already put them on the outside of buildings for fire systems. He did mention however, that they could make the strobes a different color to differentiate from the fire systems

which are typically white. For inside structures both Mike Hagen and Kevin O'Neil stated that there are a number of different items that can be used. Once again, a strobe a different color than the fire alarms (and also separate from the fire alarm notification sounder), e-mail, pager, text messaging, and local cable TV are the most popular. Mr. O'Neil did state that people are shying away from wireless since there is no way to have wireless power at this time in most buildings. He did say however, that if you already have a speaker in place such as with a fire alarm system, you could possibly run wireless through that. Mike Hagen also stated that message boards set up throughout the campus can be used to communicate emergency messages to all those who are on campus. He stated that "with a message board and a strobe hooked into the emergency alert system, and with the proper training, people will know to find a message board which will be used to receive the emergency message. The problems with using message boards are possible vandalism and maintenance and upkeep of the individual boards. Royal (2007) also stated that people are using PDA's to receive messages and that some colleges have the ability to communicate emergency messages through those devices (p. 22).

The third question is "How do colleges communicate their building evacuation plans to their campus communities"? Gwynne (2006) stated "training to ensure that population is aware of what they should do in times of emergency" is critical (p. 63). Shawn Vierzba, Security Director of SJU also stated in his interview that the biggest problem we have on the SJU campus as far as communicating our emergency action plans is with the supervisors. He stated that we have held numerous tabletop drills with the supervisors of all different factions of the university, they all know the plan very well but are not communicating back to their employees what their jobs would be in an

emergency situation. Therefore, Mr. Vierzba, has requested that during the next years tabletop exercises, the supervisors are to bring along one of their employees who will then be put in charge of enacting their part of the emergency action plan for that area. The supervisors will assist the employee with the implementation of that plan so as to not overwhelm the employee. Mr. Vierzba is hoping that with the exercise training being given to more people, they will then communicate back to their areas how the plan is to work and what their jobs are if an emergency would occur in that area.

Another critical item the researcher discovered while conducting research for this paper was that he needed to follow some basic steps while coming up with a plan for implementing a MNS. One step was to make sure that whatever system he would be suggesting for implementation followed the correct standards. MadahCom (2007) gives the requirements for a MNS as OSHA 1910.165 (¶ 3), NFPA 72, Annex E Mass Notification System (¶ 4) and the ADA Standard. (¶ 8). Colombo (2006) also stated that "all life safety connected systems must meet UL-864, 9th Edition." Requirements. (¶ 11) The second thing that the researcher learned from Sako (2007) was "there are eight steps that should be followed when building your MNS (p.44)."

1. Analyze the threats to the facility ad it's occupants
2. Gather input on how your facility operates on a daily basis.
3. Develop and Master Plan.
4. Design the Mass Notification System.
5. Develop an emergency action plan.
6. Create a phased implementation.
7. Train staff and conduct drills.

8. Conduct periodic system reviews. (p 45 & 46)

He also found information from Stuver, Keene, Carlisle (2004) that there are six other things a customer needs to think of when they are trying to decide what type of system to purchase.

1. Who operates the system?
2. Is the system designed to contact the people you need to reach?
3. Is the system scaled to your current needs and scalable to your future needs?
4. Is the system completely reliable?
5. How flexible is the system?
6. What is the pricing structure? (p. 2)

Each one of these six items will be very beneficial when the researcher starts putting together his recommendations for an up graded MNS.

Yet another factor to consider when deciding upon a MNS was advised by Almand (2007) that we should consider alternate means of notification. She also stated that “understanding the perceptions and behavior of building occupants is essential to improving the effectiveness of notification systems (p.34).”

DISCUSSION

The purpose of this applied research project was to come up with an up-graded Mass Notification System and an implementation timeline for the system on the Saint John's campus. While conducting this project the researcher found a number of different things he needed to know before he could start thinking of what types of devices were needed for the campus. One was to make sure all applicable codes were followed when looking at systems. MadahCom (2007) gave the codes as OSHA 1910.165, NFPA 72 Appendix E, and the ADA standard (p.1). Colombo, (2006) also gave UL-864, 9th edition as something that also should be followed (p.1). The system that would be recommended for installation here at SJU would be no good for anyone if the applicable codes were not followed. This information gave the researcher some direction as to what to ask for in regards to codes when looking into a system. Without this information, some of those codes may have been overlooked and therefore the system may not have been up to all applicable codes when the proposal was completed.

He also learned a lot about how to start looking into designing a system. The eight steps given by Sako (2007) gave the researcher great insight into what is all needed to be looked at when trying to put a system together. The first one was to "analyze the threats to the facility and it's occupants." (p.44) This was critical since if you do not look at these types of things, how can you decide what pieces you need for the system, where to put them and in what order. This is a very critical step in creating your system. The need to learn all you can about what is most likely to occur on campus and how to alert the occupants is a critical piece of any MNS. Without this, you may miss some very important areas of the campus and therefore render the system as incomplete. The

second question was to “gather input on how your facility operates on a daily basis.” (p.44) This is also important especially when you are talking about trying to alert an entire community of people who could be anywhere from inside a classroom to inside a tunnel on campus. Some of the things you need to know are who does your dispatching for emergencies, how do the emergency notifications come into the campus, how many security officers do you have on duty at a time and a myriad of other things to numerous to list here. This is important in case the emergency occurs at night or on a weekend, who is going to notify everyone on campus and how does that occur? The third suggestion is to “Develop a Master Plan.”(p.44) By developing a master plan you are covering your needs for not only the short term but also the long term in regards to the system. Part of that plan will also address an effective approach on how to notify all the personnel who may respond during an emergency, it also covers the notification of outside resources and who is to call for them. This plan also has tied into it the longer term outlook for not only the university but also the notification system. The fourth suggestion is “design the Mass Notification System.”(p.44) Once all of the above items are taken care of, you can finally start designing the system. This will give you a good starting point for your system design and assist you in making sure you are covering as many as your bases as possible. The fifth suggestion was “Develop an Emergency Action Plan.”(p.44) It is great to have all the warning devices in the world on campus, but if no one knows what to do when they sound, they aren’t going to be very useful. By developing an emergency action plan and communicating it to all the employees, they will not only know what all the warning devices are on campus, but also what each one means. They will also know what is expected of them during an emergency situation.

The sixth step is to “Create a phased implementation.”(p.44) This is most important since most universities will not have the funds needed to implement the entire system at once on hand. They will need to have time to put together a budget for the project, send out the bids, evaluate the bids, talk with the vendors’ and coordinate the installation of the system. The next piece of this MNS is to test it to make sure all pieces work as they should and that all of the bugs have been worked out before they accept the system as completed. Without proper testing of the system, there is no way to find out if it is doing what it was designed to do. Step seven is to “Train Staff and Conduct Drills.”(p.44) What the researcher has already found through past experiences is that without training, not only will the staff not know what to do in an emergency situation, but the rest of the employees and students will also not know what to do. The staff are going to be critical when it comes to directing the students and visitors on campus during an emergency situation. Without the proper training the staff will not know what to do when the alarms ring and therefore the system will be ineffective as a whole. Without proper and repetitive training the system will be useless. The last piece is to “Conduct Periodic System Reviews.”(p.44) This is important in the fact that just because we implement a system, does not mean the system will work forever. We need to evaluate the system as the community grows and the threats change. We then need to adjust or add on to the system as needed to meet the new challenges.

Sixth other items the researcher found to be very useful were suggested by Stuver, Keene, Carlisle (2004). The first one is “Who operates the system.”(p.2) Being here at St. John’s with a very capable I.T. force made this question very important. Do we want the I.T. people here on campus run the system, or some outside company? The researcher

had to look into all the aspects of the system and how they work. This question helped him decide to have an outside company run the system since St. John's has had power issues in the past and if the entire campus were to go down without power, what good would the system be. If we go to an outside company, this is not an issue. The second one was "is the system designed to contact the people you need to contact?"(p.2) This is also important information to know since there are a number of people on campus who have disabilities and because of the ADA standards, you need to be able to effectively communicate to those people as well. You also have to make sure that you are reaching all the people on campus including the students whether they are in a building or outside of a building. The third item was "is the system scaled to your current needs and scalable to your future needs?"(p.2) The current power system on campus must be able to handle whatever the MNS will be adding to it. If the current system can't handle the added power demands, then the system will fail to work as designed, rendering it useless in the time of need. You should also look at the future and what may be needed as far as power is concerned, we don't want to forget about the most critical part of the system and that is the power demand it puts on the campuses overall power supply. We also need to make sure the system is expandable as it needs to be able to fit any upgrades or addition of buildings on campus in the future. The fourth item is "is the system completely reliable?"(p.2) That is going to be critical in that if it is not, the system will not work as it needs to when you need it. If there are bugs in the system and they are not found while they are installing and testing it, then the system may not be as reliable as needed. We need to be very cautious when designing the system and make sure to look at the reliability of the system. We do not want to design a system that is not reliable and tell

everyone it is, that will only lead to lawsuits if the system does not work when it is supposed to and someone gets seriously injured or killed. The fifth suggestion is “how flexible is the system?”(p.2) Will the system be able to be expanded in the future? Will the system be able to communicate in all the avenues you need it to communicate in? Will the system be able to communicate normal everyday announcements? Can you program in messages on-site or does it all need to be done off-site? Those are just a few of the questions you need to ask about the flexibility of your system. The last point is “what is the pricing structure?”(p.2) If the system is done in-house, then the university needs to pay the vendor licensing fees, administration fees, backup power fees and other fees. If the system is handled off campus those costs are already tied into the vendor’s fee. You must also look at usage fees if the system is maintained off campus and also the number of people that will be authorized to use the system. This is important since most companies allow unlimited access to one person, but if a company were to add more people to the list, there are generally heavy fees associated with that. Understanding that the reality of life is that no one person will always be available when an emergency occurs. Therefore, you will need to add more people to the list and that needs to be understood and remembered when you are looking at the fee structure of your system. These are only a few fees that would be tied into a MNS, it is very important before deciding on a system, that we know up front what all the fees will be since it may be a major factor in deciding if the type of system that is being recommended is really the type of system the university can afford in the long run.

InstaCom Campus Alert tells us that the system you put in should also have the ability to “require a confirmation message or acknowledgement for each recipient (p.1).”

This would be very useful so that the system knows if all the intended recipients have received the message. If they have not, the system should have the ability to send the message out repeatedly until the emergency is over, or the recipient confirms the reception of the message. On a college campus this will be a critical piece. We do not want to have a system that sends out a message and has no ability to resend the message until everyone receives it and or the emergency is over. We have people moving around everywhere on campus and we need to make sure when we send a message out that everyone it was intended for has received it. This may include people who are on their way to, or leaving campus for any reason. If we don't reach them all and can't confirm that, we may be leading them into a dangerous situation.

Gwynne (2006) also had some vey good advice about training of staff. He stated that "deployment of trained and assertive staff to assist evacuees and manage the overall evacuation process," (p.63) We need to make sure that everyone, especially the staff is trained on the evacuation process and the MNS system. If they are trained and assertive, people in an emergency situation will follow their lead. It is a proven fact that in an emergency situation, people will follow the direction that an assertive person gives since they believe that this person has the ability to lead them in the right direction no matter what the emergency may be.

The input received from the two fire alarm company representatives was also very valuable. Both fire alarm representatives collaborated the information received from the articles the researcher read during this project. They also reiterated the importance of understanding the fact that the university would incur a huge amount of liability if they decided to purchase the system components from the alarm companies, but choose to run

the system themselves rather than run the system though the alarm companies. The researcher also found out through those interviews that there would be a significant cost savings if the SJU electricians could perform the bulk of the wiring for the devices on the system, rather than to have the alarm company hire outside electricians to perform this part of the installation. Another portion of that cost savings would be if the electricians could use the same wire runs to add additional wiring to the areas in need of specific devices.

In the interview with the security chief of SJU he brought up a very important fact for the researcher to remember. That fact is that any system that would be recommended for implementation, would have to be approved by a working group of the universities upper management which included many different areas of the SJU community. Only then, would the system have any chance of receiving funding in the future.

RECOMMENDATIONS

This research will provide Saint John's University with the information needed to put together a plan to upgrade their Mass Notification System on campus. Since SJU already has an emergency disaster plan in place they need to look into upgrading their MNS on campus. To do this they will need to be cognizant of all the applicable codes that comes with installing one of these systems. They will also need to determine if the present electrical distribution system on campus is adequate for the addition of more electrical elements. This will be critical since if they are not able to add anymore electrical components to the distribution system that is currently in place, there will be no use to coming up with a MNS since it will not be able to be implemented. They will need to develop a strategic plan for not only the design of the system, future addition to the system and also the implementation of the system once the designing is completed. Without further research into all the intricacies of a MNS, the university will not be capable of putting together a workable plan for the entire campus.

The university also needs to create a committee of all stakeholders in the MNS to research what types of incidents could occur here, what we currently have in place to deal with those situations and what buildings will receive the individual pieces of the suggested system in order of priority. They will also have to look into what our daytime and night time operations look like so they can cover the notification piece that will be needed for each. They will also need to realize they need to consider weekdays, weekends, summer months and holidays. They will need to have a guideline to follow in this process which this research will provide. The research also provides a separate guideline to look at when deciding upon a MNS such as who is to operate it, will this be

done on-campus or off-campus, is it reliable, flexible and what is the pricing structure. All of the items listed above will be critical in the universities ability to put together an all encompassing Mass Notification System that will allow the college to become as safe as possible for all those who, live, work or visit the campus in the future.

REFERENCES

Almand, Kathleen H. "Emergency Evacuation: Changing Occupant Attitudes and Notification System Effectiveness." The Authority on Fire, Electrical, and Building Safety: NFPA Journal 101.5 (2007): 34. .

AtHoc: Network-Centric Emergency Notification Systems. "Air Force Air University and Air Wave College Deploy AtHoc's Net-Centric Emergency Notification System." . 2007. <www.athoc.com>.

Colombo, Al. "Mass Notification Promotes Safety, Efficency, and Timely Response." Hospital, School, and University: Campus Safety magazine.com (2006): 11/21/2007. <http://www.campusafetymagazine.com>.

Department of Defense. Unified Facilities Criteria (UFC): Design and O&M Mass Notification Systems. Vol. 4-021-01., 2002.

e2Campus. "Start Sending Alerts to Your Entire Campus Community Today." Omnilert, LLC. 2007. <http://www.e2campus.com>.

"Emergency! Emergency! the Crucial Role of Sirens, Sounders, and Horns." Industrial Fire Journal.66 (2006): 30-3. .

General Electric. "GE Security: EST3 Audio Life Safety Control Platform." GE Security. 2006. <http://www.est.net/est3_audio.cfm>.

Grill, Raymond A. "Mass Notification-Where is it Heading?" The Authority on Fire, Electrical, and Building Safety: NFPA Journal 101.3 (2007): 83-4. .

Gwynne, S. M. V. "Emergency, Audible, and Visual." International Fire Protection (2006): 62-7. .

InstaCom. Campus Alert: 3n Partner Program., 2007.

"Mass Notification and Industry Codes, Standards and Listings." . 2007. <http://www.madah.com>.

Royal, Greg. "Emergency and Safety Communications." College Planning & Management 2007: 21-2.

APPENDIX A

Interview questions for two alarm company specialists.

1. What types of mass notification system does your company provide?
2. What are some of the reasons Universities are not purchasing systems?
3. Is there cost savings per-determined for any pieces of the system?
4. Are there any known loan opportunities available for the system that you know of?
5. What are some of the downfalls to putting in a system and managing it yourself?

The interview questions for the security director for SJU were as follows:

1. What do we and other colleges our size in Minnesota currently use for mass communication systems?
2. What do you see as the largest hurdle needed to clear to upgrade our current mass communication system?
3. How do you communicate your mass communication system to the campus community members?
4. What would be the first thing we would need to do here at SJU to start the process of upgrading our mass communication system?

APPENDIX B

Below is the proposal the researcher has come up with regarding the upgrading of the SJU Mass Notification System.

1. Put together a committee of all the principle parties to research the most likely threats to the university. Then label the buildings in order of priority that will receive installation of specific pieces of the MNS.
2. Create a master plan for this project to cover current and future needs.
3. Have the above committee discuss and decide on the specific needs for the mass notification system. Then decide on what pieces are needed to cover the areas identified above and the priority list of buildings to receive the individual pieces.
4. Decide if the system is going to be managed by on-campus I.T. personnel or an off-site company.
5. Have the physical plant director or assistant director contact the alarm company who will be supplying the different pieces of the upgraded Mass Notification System to determine the added electrical load to the current system. When that is completed, evaluate the current electrical distribution system on campus to ensure what is currently in place will be sufficient to handle the added load. If what is currently in place will not handle the added load, then determine the cost to upgrade the current system and enable it to handle the demands of the proposed Mass Communications System.
6. Create a budget for the project and tie that in with a year plan i.e. 1 year plan, 3 year plan or five year plan. The budget must contain but not be limited to yearly and future fees.
7. Set up testing/final approval criteria for the system.
8. Conduct periodic reviews of the system as a whole.