



Cellular vs. Satellite Devices for Work Alone Safety Monitoring

A white-paper by Tsunami Solutions Ltd.

www.SafetyLineLoneWorker.com

Table of Contents

1. Introduction	2
2. Flexibility	2
3. Back End Systems.....	3
4. Cellular	3
4.1 – Available device options	3
4.2 - Advantages & Drawbacks	4
5 – Satellite.....	5
5.1 – Available device options	5
5.2 – Advantages & drawbacks.....	6
6 – Networks	6
7 – Comparisons.....	6
8 – Standalone Devices?	7
9 - Recommendations	7

1. Introduction

The following is a brief discussion comparing the use of Satellite devices vs. cellular devices when used with a Work Alone Monitoring Service or System, such as the SafetyLine® LoneWorker service. These such services are for purposes of safety monitoring of staff working alone, in isolation or in potentially hazardous roles.

Prior to comparing the two, some background must first be established with respect to the accompanying work along monitoring system/service:

2. Flexibility

When developing a work alone system for a mobile or remote workforce, choosing the appropriate devices will be important to provide the best protection available for each individual. There should be the flexibility in device support to allow choosing the right device for each user, and not require every user to have the same devices as all others, as each users requirements may differ.

Effectively a good work alone solution will separate the “service” from the “device” to allow the organization to select each separately based on desired features.

SafetyLine provides a completely ubiquitous solution which is not tied to any single device, and allows an organization to select appropriate devices for each individual staff or job role.

3. Back End Systems

A good work alone monitoring system will allow for the flexibility to choose devices which are best suited for each staff person's job role and situation on a user-by-user basis, however still be able to be managed by one unified system for all users. This is important to create a consistent internal message and managerial protocol across the entire organization.

A familiar interface to the administration and monitoring should be consistent across the entire organization's work alone for various reasons, including ease of Administration, provisioning, configuration, policies and procedures, information sharing and/or privacy, and even bulk procurement pricing value discounts. However, it is also important to leverage all appropriate technologies available to deliver the best, most reliable and most effective solution for the organization.

SafetyLine can provide a complete back end management solution and work alone check-in monitoring and emergency notification service for an organization of any size or configuration. This solution will allow integration with many various devices on multiple networks.

4. Cellular

4.1 – Available device options

Cellular technology is widely available through a variety of devices; some of the most common options are:

- Pagers:
 - o These devices are not commonly available on the market anymore, and are antiquated technologies, however may still be supported by some carriers.
 - o Can be available as one-way (receive only) and two-way.
 - o Pagers can be used by monitors to receive emergency notifications from a work alone service, or by workers to check-in to a work alone service (or receive check-in reminders).
- Basic Cellular Phones:
 - o Commonly capable of making and receiving telephone calls and SMS text messages.
 - o Can be used by Workers to check-in, change settings, leave messages, or report emergencies.
 - o Can be used by Monitors to receive emergency notifications and review voice message histories.
- Smartphones:
 - o Such as Blackberries, iPhones, Android phones and Windows Phones.
 - o Capable of making and receiving telephone calls and SMS text messages, as well as supporting data access via mobile web browsers and specialty Apps.

- Can be used by Workers to check-in, change settings, leave messages, or report emergencies. A variety of other additional features can be supported, depending on device model, operating system model, and work alone service provider features.
- Most devices have integrated GPS antenna, cameras, keyboards (real or virtual and motion sensors, which allow for advanced information gathering, and transmission (via the data channel).
- Can be used by Monitors to receive emergency notifications and review voice message histories. Monitors may also be able to have access to mobile web browser monitoring apps and/or dedicated device apps for monitoring.
- Mobile Data devices:
 - Such as cellular-data supported laptops and tablets, or mobile personal data hotspots.
 - Should provide full access for workers, monitors and administrators.
- Specialty devices
 - Such as personal bar-code scanners, handheld specialty devices, 2-way tracking devices, in-vehicle units, and dedicated work alone devices.
 - Features and descriptions will be device-specific, however a good work alone solution should have the ability to integrate with a variety of device options.

The SafetyLine service has the ability to integrate with all of the above, and also has the ability to communicate and receive via standard protocols to be able to support future devices as well.

4.2 - Advantages & Drawbacks

Current cellular technologies are capable of voice and data access functionally equivalent to an office environment, at voice quality and data speeds on par. For the purposes of work alone monitoring, the advanced features allow for check-in reports and panic notifications, along with GPS tracking data if device supported. Monitors should be able to receive notifications and perform all Emergency Response Procedures steps from the field.

All of this capability is available from a variety of carriers with varying pricing options; however the commonplace usage of cellular technologies and networks for countless purposes within a work-alone environment either allow the use of existing devices (thus not requiring the procurement of devices solely for work alone monitoring) or for sharing the justification of procurement with other uses beyond just work alone.

A good work alone solution should be able to work with all existing devices in place at an Organization. SafetyLine is capable of doing so, and can therefore deploy an effective work alone solution with minimal capital and/or hardware costs.

Cellular devices are generally designed to be lightweight and easy to use, with familiar and friendly interfaces.

However, a potential drawback to cellular devices is the issue of coverage areas. Different providers will be able to offer different coverage maps, and varying degrees of quality of service within these areas. It

is recommended to review coverage areas of potential providers to ensure maximum coverage. Beyond coverage areas, cellular devices cannot be used for some work-alone monitoring features and functionalities.

*Note: The SafetyLine system is 'server based', which ensures that all processing is done on the back end, and not on the Worker's device end. This, in addition to the proactive check-in concept of SafetyLine allows for work alone monitoring and emergency notification at all times, even if a worker is sporadically or temporarily out of cellular coverage.

5 – Satellite

5.1 – Available device options

Satellite technology is widely available through a variety of devices; some of the most common options are:

- Satellite Phones:
 - o Commonly capable of making and receiving telephone calls and sometimes SMS text messages.
 - o Can be used by Workers to check-in, change settings, leave messages, or report emergencies.
 - o Can be used by Monitors to receive emergency notifications and review voice message histories.
- Personal Satellite messengers:
 - o Such as SPOT or inReach.
 - o Provide either one-way or two-way communication.
 - o Can be used by Workers to check-in, change settings, leave messages, or signal emergencies. A variety of other additional features can be supported, depending on device model, operating system model, and work alone service provider features.
 - o Devices have integrated GPS antenna, and transmission abilities (via a data satellite channel).
- Specialty devices
 - o Such as advanced satellite data access points, 2-way tracking devices, in-vehicle units, and dedicated work alone devices.
 - o Features and descriptions will be device-specific, however a good work alone solution should have the ability to integrate with a variety of device options.

The SafetyLine service has the ability to integrate with all of the above, and also has the ability to communicate and receive via standard protocols to be able to support future devices as well.

5.2 – Advantages & drawbacks

Satellite devices provide an excellent option for out-of-cellular range situations, where staff are working alone and in potentially hazardous situations. They allow staff to regularly check-in, report GPS data (which may include breadcrumb tracking), signal emergencies and even send text data messages.

With devices supporting two-way communication, workers may also receive check-in-due reminder notifications.

Satellite devices are generally designed to be more rugged and simple to operate, often times with dedicated buttons for work-alone safety purposes.

The drawbacks to satellite devices are primarily with respect to the cost/value proposition. The more affordable device options can be lacking in advanced features, whereby the device options with full capabilities may be quite costly (both for the hardware and the associated satellite access/usage service fees).

However with a good work alone monitoring and notification back end solution, such as SafetyLine, the data available from the more affordable options can be captured and processed in order to provide a solid and effective solution.

Additionally, satellite devices will also struggle at times with respect to connectivity, specifically in areas without a clear line of sight to the sky (ie. in dense tree cover, valleys, or in buildings).

6 – Networks

Both cellular and satellite devices require access via an appropriate network provider, and in each there are various network providers, providing a competitive market space. Each provider will have competitive advantages over the others, and it could also be the case that the device(s) best suited may be available from only one provider. It is worthwhile researching the pricing options, reputations, coverage, performance and pricing models of the network providers for either cellular or satellite alike.

In either case, however, it is important that a work alone back end monitoring and notification solution be chosen to be able to support any and many (or multiple) network providers, and not be intrinsically tied (or restricted) to any one carrier. SafetyLine is an excellent option in this respect, as the system is completely carrier agnostic, meaning that SafetyLine will support devices on any networks.

7 – Comparisons

	Cellular	Satellite
Pro's	<ul style="list-style-type: none"> - Common & available. - price effective. - all features available. - lightweight. 	<ul style="list-style-type: none"> - out of cellular range coverage & remote areas coverage. - simple rugged units with dedicated buttons. - various service provider options.

	<ul style="list-style-type: none"> - easy to use. - various service provider options. - GPS tracking available. - Supported by SafetyLine. 	<ul style="list-style-type: none"> - GPS tracking available. - Supported by SafetyLine.
Con's	<ul style="list-style-type: none"> - limited coverage in remote areas. 	<ul style="list-style-type: none"> - features supported can be limited. - some devices only support one-way communications (therefore no check-in reminders or other notifications). - limited coverage indoors.

8 – Standalone Devices?

With all of this discussion about devices, it begs the question – why isn't the device alone enough for a good work-alone solution?

The answer is that all of the devices alone (and their associated access services) are simply communication tools. Some may have more or less features, but the end goal is to provide communication between a person and another point of contact.

An effective work alone solution is simply enough to provide a worker with a communication tool and expect them to call for help when required. Instead, an effective solution requires a more pro-active approach, whereby workers check-in and report that they are okay. It should be the lack of a check-in report that can signal an emergency, since a worker may not be able to press a panic button if he/she is in distress, especially in cases where he/she might be unconscious. This concept is also reinforced by provincial regulations for working alone.

These devices may all be used to perform check-in reports (and panic emergencies), however it is impossible to effectively monitor the check-ins of multiple devices without the significant risk of human error, which may result in an emergency situation not resulting in any action. A work alone back end monitoring and notification service, such as SafetyLine, will ensure that all workers equipped with the devices are appropriately monitored.

Another alternative might be for a standalone device (or stand-alone app on a device) which simply sends a signal when a worker is in distress (commonly with a countdown timer on the device itself). This solution is not effective because it relies on the device to be able to send a signal (ie. battery life, network access and functioning device) at the exact time when help is needed. A better alternative is to process all of this information automatically on the back end solution, as does SafetyLine.

9 - Recommendations

Developing a good complete work alone solution for an organization can be a dynamic task; however the starting point should be a robust back end management system, like SafetyLine, which can support a variety of different devices and networks to allow the maximum flexibility in device options.

Once a system has been explored, devices can be provisioned to users on a user-by-user basis and can be chosen based on the exact best requirements and cost/benefit analysis for each worker. Each organization and scenario is unique and so this will take some analysis and review.

If there are existing devices already owned and used by the organization, then those should be used. If new devices are to be procured, then there should be no restrictions from the back-end.

For any worker requiring absolute full coverage, it is best to have a back-end solution like Safetyline, which allows for seamless switching between devices. The best recommended solution would be to use SafetyLine with a Smartphone device (and SafetyLine app and mobile web-app) while in cellular coverage areas, then to switch to using a Satellite messenger device when out of range. This will allow for the maximum features access, as well as a good cost/benefit.

For cases where not all features, or not necessarily full time coverage is required, then it is best to review the requirements for the user(s) and pick devices accordingly. If integrating such devices with SafetyLine, then consultations (and pricing via device partners) by representatives are available.

For more information about the SafetyLine service, and many of the supported cellular and satellite device options, please visit:

www.SafetyLineLoneWorker.com

or call toll-free:

1-888-WRK-ALNE

-- END --