



“We can stop work, but then nothing gets done.” Factors that support and hinder a workforce to discontinue work for safety



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ARTICLE INFO

Keywords:

Stop work
Authority to stop
Safety
Resilience engineering
Oil and gas

ABSTRACT

Workers have a legal obligation not to perform unsafe work. In many organisations this obligation is supported by an explicit authority to discontinue work or to stop the work of others if the conditions of work are unsafe. The supporting document is often called an ‘Authority to Stop an Unsafe Task.’ However, when conducting work at the sharp operational end of the organisation, stopping work for safety might be challenging at times. A better understanding is required about the stopping of work and the application of an ‘Authority to Stop.’ The aim of this research is to identify some of the factors that support and hinder a workforce to effectively stop work when a task is deemed unsafe. 10 focus groups were conducted with workers of various roles in the liquefied petroleum gas (LPG) industry. The findings outline reasons to stop, challenges and supporting factors of stopping, as well as ways of stopping. The results indicate that the stopping of an unsafe task does not solely hinge on the willingness of individual workers to stop, but also depends on contextual factors surrounding the stop work decision.

1. Introduction

The ability for a worker to stop a task when faced with an unmanageable safety risk is important across all schools of safety management—from behaviour based safety to cultural and complex-systems approaches. Abdelhamid and Everett (2000), within the behavioural safety tradition, identify “deciding to proceed with a work activity after the worker identifies an existing unsafe condition” (p. 54) as one of three “root causes” of construction accidents. Tharaldsen et al. (2008) used “I stop working when I think it’s dangerous for me or others to continue” (p. 432) as one of five outcome measures to determine the longitudinal effect of safety climate. Theories such as “drift” (Dekker, 2011) and “normalisation of deviance” (Vaughan, 2004) describe the danger of small incremental steps towards danger, and emphasise the importance of opportunities to detect and correct unsafe situations.

For example, Eagle Farm Racecourse in the northern Brisbane suburb of Ascot, Australia, was undergoing major redevelopment in 2016 (Bavas, 2016; Blucher, 2016; McCormack and Armstrong, 2016). The upgrade involved the construction of several hundred horse stables and facilities in the centre of the racing track. On 6 October 2016, two workers were killed when a crane was being used to lift a nine-tonne concrete slab into an excavated pit, where the workers helped to move the slab into place. The slab fell and fatally crushed both the 55 and 34 year-old workers.

In the days following the accident, several workers previously

employed at the site reported via their union that they had voluntarily quit the job due to safety concerns (Blucher, 2016; Branco, 2016). Other workers stated that they were worried an accident might happen, but stayed working. One of the deceased workers themselves had raised a concern with the fit of the concrete slabs with their supervisor and attempts were made to overcome the problems (Kos, 2016).

Why are workers sometimes willing to stop work—even at the expense of their employment—whilst at other times they press on despite signs of danger?

This paper describes a study carried out in an organisation that has a formal ‘Authority to Stop an Unsafe Task’ policy, informally known as the ‘Authority to Stop Work’ (ASW). The ASW policy includes a signed statement by the executive management team:

“Safety is our first priority. We want it to be yours too. Whatever your role, you have the authority and full support of the Executive Management Team to stop your own work and that of anyone else if you think it is unsafe. Whether the task is big or small, whether you need to stop for 5 minutes, 5 hours or 5 days, we will support you to do what it takes to do the job safely.”

Such stop work policies are common in high-risk industries such as construction, mining, oil and gas, and energy distribution (Mackenzie, 2017). ASW policy is deemed a valuable and critical element of safety programs, e.g. due to intending to make work safer by increasing the likelihood that workers will stop unsafe tasks (Gochfeld et al., 2006;

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Hurwitz, 2014; Johnson, 2015; Lozowski, 2013; Marks et al., 2016; Tracy, 2014; Walter, 2012). The use of ASW is widely recommended, relied on, and requested by regulators (Beaubouef, 2013; Efendi, 2016; Morrison, 2015; Muscatello and Heshizer, 2002). Good safety leaders are expected to recognize and reinforce the application of an ASW policy within their teams (Quesnelle, 2016). Some companies perform stop work drills to identify and support everyone’s understanding and use of ASW policy (Mozzani, 2017), or hand out ASW awards to employees who have stopped for safety, such as the “Governor’s Stop Work Authority Award” (Wyoming Department of Workforce Services, 2017).

Stop work policy not only provides workers with the right and authority to discontinue work but also with the responsibility and obligation to follow such policy (Efendi, 2016; Ivensky, 2016; Walter, 2007). In case of an accident, workers are sometimes held responsible for not stopping or stopping too late (Bromwich, 2011; “Is There a Feasible Means of Abatement?”, 2016; Johnson, 2010; Khalifa, 2015). An accident usually raises questions why stopping did not occur, such as in the time leading up to the Deepwater Horizon rig explosion:

BP and Transocean ignored a lot of warning signs, and now a lot of people who survived the explosion say they were worried about those warning signs. So why weren’t they raising hell? Everyone aboard Deepwater Horizon had Stop Work Authority. The most damning thing we know about BP’s safety culture is that nobody blew the whistle. Safety and health professionals should ask themselves whether they would raise hell to stop something that looked like a disaster waiting to happen. And they should ask themselves what would happen if they missed it or were too cowed to blow the whistle: Would others at their operation raise hell anyway?
(Johnson, 2010, p. 220)

However, ASW policies build on unrealistic assumptions about work, such as that:

- people always stop when a situation is unsafe;
- everybody knows what is safe or unsafe. This does not have to be further specified;
- warning signs of disasters are always present and clearly visible;
- safety can always be the first priority;
- stopping colleagues is always possible;
- big and small tasks can be stopped, independently of the type of work and the duration; and
- it is always safe to stop.

The literature refers to such assumptions as “work-as-planned” or “work-as-imagined” by management (Clay-Williams et al., 2015; Dekker, 2003; Hollnagel, 2012, 2014; Hollnagel et al., 2006; Lay et al., 2015; Lundberg et al., 2009; Nemeth et al., 2011; Sujan et al., 2015). Where management believe that it is easy and reasonable to stop work, they are surprised when the ASW policy goes unused, and may even hold workers responsible for neglecting to stop when in hindsight they clearly should have.

Work as it is actually done in daily operation (“work-as-done”) always differs by some degree from work-as-imagined (Borys, 2009; Clay-Williams et al., 2015; Hollnagel, 2009, 2012; Lundberg et al., 2009; Sujan et al., 2015). Risks may be hidden and danger not always clearly visible. Workers face challenges, conflicting goals, and uncertainty about whether work can be continued or has to be stopped (Gomes et al., 2009). Gaps may exist between work-as-imagined and work-as-done (Costella et al., 2009; Dekker, 2006; Hollnagel, 2012, 2014; Lundberg et al., 2009). The views of those who imagine and plan versus actually perform the work potentially differ.

For work to succeed it is important to examine, understand, monitor, and reduce gaps between work-as-imagined and work-as-done (Abech et al., 2006; Costella et al., 2009; Dekker, 2006; Hollnagel et al., 2006). This allows organisational decision-makers to be well informed about daily operation and support workers to be successful at work

(Dekker, 2006). A large gap mirrors managerial leadership that is poorly informed about the challenges of actual work, which may obscure risks of daily operation and indicate organisational brittleness rather than resilience.

The ASW policy represents work-as-imagined by the management. Applying this authority in everyday operation is work-as-done by the workforce. This paper aims to better understand the application of authority to stop work in practice, and—more specifically—to explore the factors that support and hinder workers in discontinuing unsafe tasks. The findings are discussed in terms of “stopping as imagined” versus “stopping as done in everyday work situations.”

2. Methods

2.1. Participants

All participants in the present study worked for a single major energy supplier in Australia at one of 8 different LPG terminals. Workers were informed of the study and recruited by attending a toolbox talk held by the first two authors, or via their terminal managers. All workers received the same information about the study and given time to make a decision about participation. Participation was entirely voluntary. Neither selection criteria nor restrictions in the number of participants were applied. Anyone at the terminals was invited to participate, independently of their role, age, or experience (see Table 1). Nobody who wanted to participate was excluded. Workers who agreed to participate were randomly allocated to a focus group. 4 focus groups were held with 4 participants, whereas 6 groups with 3 participants. Focus groups were chosen as a method to obtain personal and group opinions, allow participants to interact with each other, and stimulate group discussion.

Table 1 provides an overview of participants’ roles, age and experience. In total, 34 people decided to attend a focus group, all but one were male, and all but one were directly employed by the energy supplier. Participants had worked for the supplier between 1 and 30 years, with an average of 8.5 years (*SD* = 7.7). Participants’ average age was 45.8 years (*SD* = 9.1). The average duration of the focus groups was 68.1 minutes (*SD* = 16.0), ranging from 45 to 99 minutes.

Table 1
Participants’ roles, age and experience.

		Number of participants:
Roles	Drivers (tanker, cylinder truck)	18
	Fitters (Service & Installation, maintenance)	4
	Leading hands	4
	Terminal managers	4
	Operators (terminal, tanker)	11
	Administration staff (sales, scheduling, office assistance)	3
	Missing (no response)	1
Age bands	18–30 years	2
	31–40 years	9
	41–50 years	11
	51–60 years	10
	61 + years	1
	Missing (no response)	1
Experience bands	0–2 years	6
	3–5 years	12
	6–10 years	8
	11–20 years	4
	21–30 years	4
	Missing (no response)	0

Note. The numbers regarding participants’ roles do not equal the total number of participants (34) as some participants (9) act in multiple roles, e.g. driver and terminal operator.

Table 2
Overview of themes in the analysis.

Reasons to stop	Factors that support stopping	Factors that hamper stopping	Ways of stopping
<ul style="list-style-type: none"> • Non-compliance • Discouragement by others • Personal responsibility and liability • Ignition sources • Blocked access • Dogs and dog faeces • Adverse weather • Deficient equipment • Presence of opposition • Concern about rushing and overwork 	<ul style="list-style-type: none"> • Authority to stop • Managerial support, particularly from direct management • Job security • Teamwork • Training • Experience • Seniority 	<ul style="list-style-type: none"> • Need to justify stop work decision to management • Being afraid of others • Disagreement about safety, risk, danger, and tasks to be stopped/continued • Unfinished tasks that affect work in the future • Attitude of doing work as done in the past • Credibility at stake • Potential of being deemed lazy or unwilling to do task • Long-term customers • Repeatedly being requested to complete job • Reimbursement dependent on job completion • Uncertainty and ambiguous instructions • Fatigue • ‘She’ll be right’-attitude • Need to be productive 	<ul style="list-style-type: none"> • Rectify • Delay • Consult, transfer • Abandon

2.2. Procedure

Each participant provided basic demographic details and took part in a focus group facilitated by the first and second authors. Participants initially signed an informed consent form and were free to provide details about their demographics (including anonymous participation). Participants were informed that there are no correct or incorrect answers and that this research is only interested in people’s opinions. Consequently, no coaching of participants was required or performed. All questions asked during the focus groups pertained to the stopping of work, and more specifically centred around the following three questions:

- What makes you stop your own work and/or the work of others?
- What makes you continue work when you probably should stop?
- What are your thoughts on the ‘Authority to Stop Work’?

All participants were given equal amount of time to speak. Towards the end of each session, every participant was asked if they had anything else they would like to share. All focus groups were audio-recorded, resulting in a total of 681 minutes of recording.

2.3. Data analysis

The data were analysed following the precepts of Grounded Theory methodology (Strauss and Corbin, 1990, 1997) and the method of six analytic phases outlined by Braun and Clarke (2006). Emerging categories were related to each other according to axial coding (Corbin and Strauss, 2008). In a first phase, the audio-recordings were transcribed word-by-word by a professional transcribing service and checked against the recordings by the first author. The first and second authors then familiarised themselves with the data by thoroughly reading through the transcripts.

In a second phase, the first author classified the transcripts into three categories of discourse, referred to as the following codes:

- Descriptions: explanations of work processes, such as ‘The process of lodging an observation’
- Examples: references to a particular point in time, such as ‘Having experienced an explosion when a forklift ignited a gas cloud and caught fire while decanting cylinders’
- Topics: participants expressed opinions, such as ‘There being no consequences of stopping if a situation was unsafe’

Participants’ discourse was then collated relevant to each code. Each description, example, and topic was further coded according to whether it related to work for the energy supplier (as opposed to working at

home or in previous employment), and whether it related to stopping or not stopping work. Only transcript portions relating to stopping or not stopping work for the supplier were analysed further for this paper. The second author independently categorised and coded randomly-selected sections of the manuscript to ensure that categories and codes were applied consistently. In total there were 254 topics, 38 examples, and 6 descriptions.

In a third phase, the first author collated the topics, descriptions and examples into themes. Each theme covered causal conditions (reasons to stop work) and context conditions (factors that support or hinder stopping). All of the authors were then involved in collaboratively organising, describing, and refining the resultant themes (fourth phase), selecting distinctive names of the themes (fifth phase) and reporting (sixth phase). The themes emerged as a result of the analytic process.

The strength of this type of analysis is that it captures and describes work as experienced and understood by those who perform the work. All opinions of the participants were treated as equally important, no matter if expressed by one or several participants, and all descriptions, examples, and topics were assumed to be the true subjective experiences of the participants. Furthermore, the analysis allowed grouping and analysing content meaningfully, e.g. when participants added to a previously stated description, example or topic during a later stage of the focus group conversation.

An important limitation is that the resulting themes can only be generalised to the extent that the participants’ experiences are representative. In particular, only one participant in the study was a contractor and so the results do not represent a contractor perspective of stopping work. Throughout the findings section, no reference can be made to participants’ background due to confidentiality (participants could be identified by their roles, gender, and discourse). Instead, we indicate the number of focus groups that have reported any particular theme. A theme reported by 6 focus groups, for instance, has been expressed by *at least* 6 out of 34 participants.

3. Findings

The findings are presented under the categories: the reasons to stop (3.1), the factors that support and hamper stopping (3.2), and the ways of stopping (3.3). Table 2 provides an overview of the themes emerging from the analysis. The reasons to stop and the factors that support and hamper stopping are further sub-categorised according to aspects of the work context:

- Procedural: the prevailing set of rules (representing work-as-imagined)
- Social: the people, cohorts, or institutions individual workers have to interact and collaborate with, including the opportunities and

challenges that arise from this interaction (e.g. customers; team-work)

- Technical/physical: the surrounding materialistic environment (e.g. machinery; equipment)
- Non-technical/personal: individual workers' experiences, knowledge, beliefs, feelings, perceptions, reflections, and interpretations (e.g. perceived workload, fatigue; interpretations of safety, risk, responsibility)

3.1. Reasons to stop

When workers stop for safety, there is always an explicit trigger—a “reason to stop”—even if the reason is just “things didn't feel right.” A reason to stop creates a period of uncertainty that may ultimately result in either stopping or continuing work, depending on contextual factors (see 3.2). Reasons to stop frequently provide at least a momentary interruption to work, and may trigger an explicit discussion of safety.

Not all of the reasons described by the participants actually resulted in stopping work. This section includes examples where a reason to stop was present, but where work ultimately continued.

3.1.1. Procedural aspects

Workers consider stopping when they observe non-compliance with the given rules and conditions (reported in 7 focus groups). When describing stopping or not stopping, the participants frequently used terms related to formal requirements for work: “rules”, “safe and compliant”, “legal” and “illegal”. An illustrative example involved the fitting of a scaffolding tag. A “scaf tag” is a coloured label fitted to scaffolding to indicate its current state. Scaffolds should be marked with a green scaf-tag only after they have been fully assembled and inspected. Participants spoke of a time when contractors came into the terminal to erect scaffolding around several LPG tanks for maintenance work:

“When they finished, the scaffolding didn't have a scaf-tag on it. I said, “I don't think that's right,” stopped the work, got the scaffolder back to make a few adjustments until the scaffolding was right and put a scaf-tag on it. I wasn't happy with the way they'd finished. There were sections there that weren't safe. There is a couple of boards missing, there were gaps, holes still in walkways. Probably for blokes who work on it every day it was fine, but we don't work on it every day. [The contractors] thought [the scaffolding] was suitable, but [...] we looked at it and said, “That's not right.” To me, just wasn't quite safe enough to be working on. So I said, “No, fix up that problem.” I haven't got a scaffold ticket. But as far as I was concerned it wasn't safe to walk up there. And they went back and changed it.”

Participants also offered examples when they refused to fit gas cylinders at customer sites where the compliance plate was missing (reported in 2 focus groups), and refusing to brake a rule against transporting gas cylinders through premises (see 3.3.4). In each case, reference was made to a specific rule as the reason why work did not continue. Attending a recent job, workers noticed that there was “no compliance plate [but] a brand new installation. I spoke to the customer [who explained that] the plumber was there that morning, fitted it up. [The plumber] said, “I was in a hurry. I didn't fit [the compliance plate].” So he came back, fitted the plate, I went back and fitted the cylinder. [If] there's no [compliance] plate, it's no gas. We only go [by] the compliance plate.” The same applies to cylinders: “If [a cylinder] is out-of-test, we can't [fill] it. You just don't deliver.”

Participants also described situations where rules could have stopped work, but where work ultimately continued in conflict with the rule. Workers recognized, yet disagreed with a reason to stop. An example is the banned practice of standing on the tailgate of an LPG truck while it is operating (reported in 4 focus groups):

“The rules are, ‘Don't ride the tailgate.’” Participants agreed that the procedure specifies the safest possible way to handle a tailgate.

According to the procedure, the tailgate is up (level with the loading platform of the truck), the gas cylinders are put onto the tailgate, the tailgate is lowered half-way while the worker is standing on the platform, the worker uses the tailgate to step down to the ground, the tailgate is lowered to the ground, and the cylinders are removed from the tailgate. However, participants questioned the risks involved in following this rule as well as its practicability and efficiency: *“You bring the tailgate halfway up, step up [onto the tailgate], step up [onto the platform of the truck], bring the tailgate up, put the bottles on [the tailgate], lower [the tailgate halfway] down, step down [onto the tailgate], step down [to the ground]: Four times you've got to step up [and down to perform] one delivery. So you do that 40 times a day, you've got more chance of having a trip or a fall than injuring yourself riding the tailgate.”* Furthermore, workers outlined the need to physically hold onto the cylinders while operating the tailgate on uneven ground to prevent cylinders from falling: *“If I let the tailgate down with a 45-kilo bottle up the top of a hill, it's not pretty if anything goes wrong. The bottle can come off the truck and hit something. Impracticable!”* Using straps to attach cylinders to the tailgate was regarded a “perfect” way of handling cylinders but impractical due to the amount of time this would take: *“[Then] we're talking 10 minutes a delivery.”* The amount of detail in this reflection indicates that the workers are not casually breaking the rule—they have a well-thought-out justification for continuing work. The reason to stop created a conflict that has been resolved in favour of productivity and efficiency.

A similar example relates to the common practice of stepping and walking on wooden pallets used to transport materials and cylinders (reported in 1 focus group). At a particular terminal, workers used to level pallets with a ramp to evenly roll cylinders onto the pallet:

“It was just a normal thing that everyone did. Just that one pallet had a wider gap. I fell through and twinged my back. That's why we can't walk on [pallets] anymore. [Superiors] push for safety but they're not giving us anything to replace [the practice of stepping onto pallets]. The [safety solution] was to put the pallet on the ramp and me lift the bottles onto the pallet, which is a good 100 mil[limetres]. [HSE professionals] want me to lift 90 kg bottles all day onto this pallet. [This is] alright if you're doing the 9 kg bottles. But 90 kg bottles all day long? You are going to have people injured. You'll stretch, you'll strain, because it's a big reach, roll 90 kg, lean over. [This work practice] contradicts everything [the company has] taught me over the years I've been with them. So we actually did completely stop. I can't do my job without walking on the pallets. You're going to do more injury [lifting] than rolling [cylinders] onto the pallet. So I still just roll [cylinders] onto pallets because I believe I'm more safe for doing that than what [HSE professionals] want me to do. Now that's a safety officer telling the staff to [handle the cylinders in a particular] way because [they] couldn't come up with a better option.” The rule, by stopping a practice necessary to get work done, also (temporarily) stopped the work. Ultimately, however, the work continued despite the reason to stop.

3.1.2. Social aspects

Workers may discontinue when their work is discouraged by others, such as colleagues or customers (reported in 3 focus groups). Customers occasionally call the energy supplier to suggest postponing a delivery when there is a potential risk to the driver:

“Don't come today. It's too dangerous, too wet. Leave it for next week.” Yet customers do not always have such friendly intentions:

“You can get people that aren't real nice. [Yet] over the time, we've really only had about one, the golfer. [We] had to do [a] gas disconnection for non-payment. I went to the front door. [The customer] didn't answer the door. So [name of colleague] went around the back to actually disconnect the meter. [The customer and friends] were around the back and [the customer] had a golf club over his shoulder. So we just left and got assistance.”

Workers also may call upon others to stop and not to take risks (reported in 3 focus groups). A worker spoke of a time when he was stopped by a colleague:

“Where I come from [prior to working for [the energy supplier], we’ve done everything. If we didn’t do [the work] the boss would sack us and get someone else [to do the work]. Moving into [name of energy supplier] where it’s all about safety—which is great—I was still in that sort of frame [of] mind where I thought I could do this [task] myself. [Name of peer] said, “Hey, stop!” Once I looked at [the task] and seen what [the colleague meant], I thought I could [have] hurt my back or strained myself.”

Workers also often stop customers from transporting too many gas cylinders in their private cars. A worker spoke of a time when this was particularly challenging:

“[Customers] are only allowed to take one [cylinder]. I had an ex-policeman come in, two 9 kg [cylinders] in [the] back of his car, [saying,] “I will be taking two 9 kg [cylinders] with me.” I said, “No. I’ve explained to you all the reasons why you can’t. I explained the reasons what one bottle of LPG will do in your vehicle if it goes wrong. If you don’t care about your safety, I have to. If you don’t care about safety, I don’t need you as a customer. You’re a liability. See you later.” We get that all the time. So that’s Authority to Stop Work, all the time.”

Workers sometimes stop when they see the need to raise awareness about unresolved issues and when they disagree with work practices for which they can be held personally responsible or liable (reported in 7 focus groups). An example is the former practice of securing gas cylinders on the back of delivery trucks with only a few straps. Workers worried cylinders could become loose and drivers could be made responsible:

“The boss said, “If you get caught by the ‘Road and Transport Authority’ [RTA], you’ll wear the fine.” [Former management] wanted us to do the work but they didn’t want to wear the cost if we got booked. That wasn’t good enough. So I said, “I’m not going to do [further deliveries] until a cage is built on the back of the truck. If you want me to do a job, you supply the tools to make that safe so I’m not going to get booked.” We felt we had to stop the work because you say it every month at the safety meeting, “Something has to be done!” Nothing gets done. And then you just go, “I’ve had enough. I’m not doing it anymore.” So I stopped work and that lasted almost all summer until [management] finally got a cage organised for the back of the truck so that the bottles were enclosed and weren’t loose.”

3.1.3. Technical/physical aspects

Work is stopped due to a range of potential ignition sources at various locations (reported in 5 focus groups). Examples are fires, mobile phones, electrical installations, smoking, or different types of cutters being used close by. Workers reported a situation when they stopped a delivery of gas cylinders to a client’s yard where other workers were using oxygen cutters. The workers challenged the delivery driver by questioning, “You leave the bottles over there?” “Yes,” the worker responded, “a) you’ve got obstacles in the way for me to trip over and hurt myself, b) you’re using the oxy cutter, and c) my truck’s got 144 [gas] bottles [loaded]. If it blows up, there goes the whole town. My safety comes first.”

Work is stopped when access is blocked by physical obstacles (reported in 5 focus groups). Participants spoke of customer sites where deliveries could not be completed due to fallen roofs and fences, open sewage systems, nails poking out, driveways too steep, too many flights of stairs, or the delivery location being too far off the road. Participants stop due to the risks involved:

“We’re not going to do [the delivery] until [the customer] fix[es] the site so it’s safe for us. If the brakes [of the truck] failed it would end up knocking half the house down and going over the edge of an embankment. If I had dropped one [cylinder] whilst going down the big hill... It’s too dangerous.”

Another example pertained to a terminal that had a set of broken stairs that “were condemned six years earlier.” Workers kept informing superiors that the stairs could break. Yet superiors did not repair the stairs “because [this] would cost money. Then [a senior manager] came through [the terminal and decided], “That’s it. No one walks down [the stairs].” She was high up in [the company] and then [management] fixed [the stairs] because she actually had the authority to say, “Stop work.” But as [for] workers, [superiors would ask,] “What’s wrong with [the stairs]? Just use them.””

Other reasons to stop a job at customer sites are the presence and effects of dogs (reported in 4 focus groups):

- Aggressive dogs: *“There’s a [customer] place [with] a dog. You can tell he’s not a friendly dog. So I definitely won’t go in there. [A] dog may be vicious. Not often, I wouldn’t say daily but every second or third day you’d come across that.”*
- Sleeping dogs waking up: *“You may get in[to a customer’s yard] and the dog might be asleep and wake up while you’re halfway through filling.”*
- Dogs potentially breaking free: *“We couldn’t do the delivery because the dog was out on its long line. The concern is that the chain might snap.”*
- Dogs running off: *“We’ve stopped a couple of jobs because the last you want to be doing is spending an hour running around chasing a dog. [There is] the chance of [a dog] getting hit or anything going wrong. I’ve had a dog come out once. We spent over an hour trying to get it. As soon as [a dog gets] out, I feel obliged to get the dog.”*
- Dog faeces: *“I’ve stopped more jobs [due to] dog faeces than aggressive dogs. You, the hose... So I’ve refused to go in.”*

Work is stopped due to adverse weather conditions, such as strong winds, heavy rain, heat, or flooded roads (reported in 4 focus groups):

“In winter when it’s absolutely pissing down rain, you can sit in your truck and go, “I’m sitting here for 15, 20 minutes” because [the rain] is coming down that hard sideways. I sit there for the rain to calm down because you can’t do nothing.”

The participants of one focus group spoke of a situation when they “stopped craning tanks on [a] truck [in] 25 knots wind [and] rain.” The leading hand instructed workers, ““No, fellas. Pack it up. It’s finished until the weather [has] cleared up.” I knew it was the right decision. [I] don’t want anyone [to get] hurt. The truck had to go back about three or four hours to [where it came from and] come back another week.”

Workers sometimes stop work when equipment is deficient (reported in 4 focus groups). For instance, delivery trucks are equipped with printers to provide customers with receipts. A driver expressed his frustration and the consequences of the printer not getting repaired:

“I haven’t had mine working for four months. Until I get my printer fixed, [customers] don’t get receipts. There’s no way I’m doing 30 dockets each day because management won’t pull their finger out and give me the tools so I can do my job. The more time [you] spend writing out a docket [the more] you’re going to be rushing to the next job. Every time you fill out a docket might only take five minutes—at the end of the day, five minutes add up.”

An operator explained how to get deficient equipment replaced quickly:

“If it’s deficient equipment you’d stop the job [and] fill out a [company internal] observation. But you’d also ring someone straight away and get it ordered, rather than letting it go through a process. [That way] you can have [the piece of equipment] by the next day.”

Work is also stopped when customers have cylinders installed from the opposition (reported in 3 focus groups). A worker explained, “I can’t do the delivery because there is a process [in place]: a gasfitter [has] to check [the customer site] and make sure [the site] is compliant.” The same

applies to alterations made by third parties:

“[Fitters from other companies] get in and out [of the customer site] and get [the] money as quick as possible. The least amount of copper pipe they ought to put in saves them. And they don’t care [what happens] after because they walk away from that job, probably never see it again. And then we’re left with the drama of trying to satisfy a customer but do it safely. And there are sites where we just said, “We can’t deliver anymore, sorry.””

3.1.4. Nontechnical/personal aspects

Participants spoke of situations when they discontinued work despite the fact that there were no specific rules, technical problems, or social expectations to stop. Instead, workers had a general concern about the implications of rushing and overwork (reported in 6 focus groups):

“There’s been deliveries we’ve stopped because we’ve had a look at [the run sheet] and from experience gone, “We’re not going to achieve that today. There’s 20 jobs. That [delivery] is 10 hours away, forget it.” Time efficiency. So we’re not going to push ourselves to the point of causing a problem. I just leave [the job] till the next day when I’m [in the area]. You want to be efficient [and] do as many jobs as you can.”

Drivers have developed strategies to avoid rushing and overwork. Instead of driving back to the terminal upon completion of all scheduled deliveries, some drivers wait in the delivery area until a certain time in case of being called by administration to conduct further deliveries.

3.2. Factors that support and hamper stopping

A reason to stop work typically triggers a process of subconscious or explicit consideration of safety. This section describes the factors that positively or negatively influence this process in favour of stopping. The ASW procedure is intended as a deliberate positive influence. Workers’ reflections on this procedure are included under the “Procedural Aspects” heading (3.2.1).

3.2.1. Procedural aspects

The ASW policy supports stopping for safety. Many participants like and appreciate the ASW (reported in 7 focus groups):

“I thought it was great to give you the ASW”; “[The ASW]’s ideal. It’s actually a great, great asset to the company”; “[The ASW]’s a good backup. You know it’s there, it’s been signed”; “Having the ASW is even better because it’s lives you’re dealing with”; “It was actually something that felt good, being able to say, “This doesn’t feel right.””; “When [management] introduced the ASW, that was just a reinforcement for people to say, “The company recognise[s] that there are things out there that you can’t do, and we don’t want to have lost time injuries.” So the best thing is to say, “Stop work and let’s see if we can fix [an issue at hand].””; “[Executive management is] backing you up. They’re putting faith in their employees to say, “You can stop and we’ll back you up.””; “It is good that [the ASW] is coming right from the top. That’s what I like about it. Responsibility is going to the top.”; “If anybody wants to come back at me—well, I’ve got the piece of paper that says I can [stop].”; “The permission to stop work gave me the best feeling as an employee because that meant I could stop.”; “The ASW [has] reinforced that I’m not going to be looked at [as] being silly [for stopping] the job.”; “[The ASW] gave me power: I did no longer have to [justify], “I’m not going to do this.””; “Everyone in the company is on the same page with regards to [stopping], [which] makes me feel better.”; “I can’t recall any backlash [to] someone stopping a job.”

However, participants also made critical remarks about the ASW (reported in 7 focus groups). Participants challenged whether the ASW would indeed prevent people from experiencing negative consequences:

“But whether [the ASW] stops any blow-back is another question. I sort

of don’t understand that we need [the ASW] as a license to stop work” since workers had already stopped work when necessary prior to the introduction of the ASW. Participants also challenged managerial support when stopping due to not knowing those who have signed the ASW and their roles within the organization (reported in 2 focus groups):

“I don’t know anybody from the executive [management] team and they don’t actually have any input into my daily job or site. I really don’t have much faith that [executive management] would back me if it came to [stopping]. I’m never going to know these people, probably. I could pass them on the street and I wouldn’t know who they were. Same, they could pass me on the street and they definitely wouldn’t know who I am. Me personally, I couldn’t care less who they are and what they’ve signed. All I know [is] that [executive management] is covering [themselves] so that they can put the blame onto somebody else if something [negative] happens.”

In the course of discussing the ASW, participants spoke about the type of tasks that the ASW alleviates stopping. Due to having the ASW, it is a lot easier to stop company-internal tasks, such as tasks at an LPG terminal. In contrast, company-external tasks are more difficult to stop, such as dealing with customers outside the terminals. As such, the ASW mainly facilitates discontinuing company-internal tasks.

3.2.2. Social aspects

Support from management positively influences stopping (reported in 2 focus groups). Workers are more likely to stop a task when they feel supported by direct management (e.g. line supervisors, terminal managers). Having approachable and supportive managers is central to the effectiveness of an ASW:

“The only way that such a great tool [ASW] can be effective is by having an approachable boss: The stop work will work as long as we’ve got the support of our supervisors. As long as [a worker] knows a hundred percent that he has the support of his boss or the person above to stop, he will. If there is the slightest bit of, “[The manager] is not going to back me up,” [workers] are not going to [stop].”

Workers spoke of times when they felt supported by management (reported in 9 focus groups), for instance:

“We’ve been told by [management], “If it gets too hot [when working at the terminal in summer] come over [to the offices] and sit in the air con for 10 minutes.” We know we’re not going to get in trouble.”

Participants also spoke of situations when managerial support was absent (reported in 7 focus groups) and workers had to justify stop work decisions to management (reported in 6 focus groups). A worker explained:

“There is going to be a question [by superiors about] why you have stopped. A lot of the time you’re guilty until you prove yourself innocent. Having to prove yourself makes everything harder.”

Another worker spoke of a time when he had to justify a stop-work decision to management. The worker found a piece of fibro on the back of a truck. He decided to err on the side of caution, stopped, and asked a colleague about the possibility of the material containing asbestos. Both workers decided to have the fibro inspected and removed by a specialized company, which later confirmed the absence of asbestos in the material. Sometime later, the workers were called by their superiors and questioned about their decision: *“Why didn’t you just ask the fitters? They would’ve told you it wasn’t asbestos. You could’ve thrown it in the bin.”* The workers had to reiterated their concerns and justify their decision: *“What if our truck gets to the tip and [found it was asbestos]? Then it all just cascades back to us.”*

Job security positively influences workers’ willingness to stop (reported in 2 focus groups). Workers on permanent contracts are more inclined to discontinue a task for safety. A worker spoke of an experience prior to working for the energy supplier when stopping was

hampered by a lack of job security: A customer came into the terminal to get “three or four [gas] bottles.” Pointing out company policy, the worker informed the customer, “You can only take a maximum of two [cylinders]. Look at the sign.” When the client outlined to know and speak to the worker’s boss, the worker repeated company policy: ““Okay, and what? You can only take two [cylinders].” Then [the customer] goes in, talks to my boss, and my boss comes out and says, “Just give him four.” I was still casual then. I didn’t want to lose my job. So I was like, “Okay, whatever. That’s on my boss’s head now.” I didn’t know what to do. I knew that it was wrong. But then that’s my boss telling me. I didn’t want to lose my job because I [had] just moved to the country. I didn’t want to have to go through that again. So I just did [hand out the cylinders]. Now I wouldn’t do it because I’ve got job security.”

The relevance of job security is exacerbated for new employees:

“As a new employee to the company, you’ll think, “If I don’t do this [job], I’ll get my butt kicked and there goes my job.” You’ll want to do [the job] to prove that you can do it to keep the job.”

Teamwork supports stopping too (reported in 2 focus groups). Workers explained:

“If people are working as a team they’re going to be more inclined to stop work and use that authority [to stop].”

Stopping is sometimes even seen as a team decision rather than the decision of an individual worker:

“I don’t think stopping work is an individual decision. [Workers] are most likely going to get on the phone to [their direct managers] and say, “This is happening.” Then [stopping] is a joint decision. [The] more of a team you got, the more things are going to be raised.”

In contrast to teamwork, stopping is hampered when workers are afraid to discontinue the work of others (reported in 2 focus groups). Some workers are reluctant to stop colleagues at other gas terminals:

“I’d be afraid to walk into [another terminal, saying], “That looks a bit unsafe! I think we should stop doing that.” I don’t know the environment, what their culture is. I’d certainly ask the question, “Is that safe?” But I wouldn’t go up to [colleague] and say, “Hey you, stop!” Because I might be wrong.”

Another participant spoke of his experience when actually having stopped a senior colleague at another terminal: The worker outlined his opinion, “You’ll probably get into trouble.” The colleague responded, “I don’t have a drama with [this particular task]. I’ll get in trouble, who cares?”

As such, stopping is negatively influenced by people’s different views of safety, risk, danger, and the tasks that have to be stopped versus those that can be continued (reported in 9 focus groups). Participants explained, “What’s not safe for [some]one may be safe for [some]one [else]. Is it dangerous or isn’t it? Everyone’s got their own opinion. Every person interprets risk differently.”

Stopping for safety is less likely when unfinished work will affect the own work or the work of others in the future (reported in 3 focus groups):

“With the heat it’s up to yourself whether you stop or not. Generally you don’t because you’re just going to get those jobs back the next day, on top of the 30 [jobs] that you’ve already got for the next day. If you don’t get [the jobs] done, it’s going to have that snowball effect where it’s going to affect day staff. And day staff’s [saying], “They’re lazy!” Someone has to eventually go back to [do] that job. That’s why we try our best to do the delivery, even though there is a dog [onsite]. If we get [the unfinished jobs] back on our next [delivery] run, all because we couldn’t be bothered doing a job due to a dog, we’re only hurting ourselves. [The previously left out job] might be another 10 km away from our [delivery] run area that we’ve got for that day. All [that our superiors] will say is, “If you get behind, work Saturday.” It’s like we’ve got to work six days a

week, 12 hours a day, just to keep [superiors] happy. Then you think, “If I don’t do these 10 [jobs] this afternoon, they’re going to be there tomorrow, the next day, Saturday, Sunday.” It only comes back on us.”

Stopping is hampered by a prevailing attitude of doing work in a way it used to be done in the past (reported in 2 focus groups). A maintenance fitter spoke of a time when he was asked by a delivery driver to make up a “45-degree angle fitting.” This fitting would allow filling cylinders at a customer site where there was a lack of space around the cylinders. The fitter initially thought, “That’s no problem.” Yet then he checked all manuals, was unable to find a professional solution, and started questioning “why there is not a fitting that’s actually manufactured. If I’m going to put this [fitting] together and something goes wrong, [the driver may get] face burn. We shouldn’t be delivering to this [customer] site if those bottles are in a position where you cannot do [the refilling] the correct way.” Consequently, the fitter declined the driver’s request and instructed the cylinders to be moved. “So I’ve been told [by colleagues], “Why won’t you make up that fitting? We used to do this all the time. We’ve made them up in the past. We’ve done this before.” I was getting pressured by [peers] to make up [the fitting]. Guys that have been [in the company] for 10, 15, 20 years seem to have this mentality: They want to live in the past.”

Various factors hamper stopping when interacting with customers (reported in 9 focus groups). Stopping is less likely when workers’ credibility is at stake, for instance when customers have a small Pomeranian dog: Customers question delivery drivers, “You couldn’t come in because of the dog? You’re kidding!”

Stopping is hampered when workers feel like they are deemed lazy or unwilling to do their work when they discontinue a task:

“There is always in your mind, “I wonder what other people will think. [Do] people think I’m just lazy, don’t want to do [the job], or making up excuses?””

Stopping for safety is also more difficult when interacting with long-term customers, whose sites often remain the same for many years:

“Unless something dramatically has changed at [a long-term customer] site, you don’t get a lot of reason to stop a job because you’ve been going to this customer for a number of years.”

Customers are surprised when they are informed that delivery is no longer possible, e.g. due to new company rules:

“They go off. “We’re getting gas for 20 years. Why can’t you deliver now?” It’s the same story; we hear it all the time.”

Stopping is challenging—and potentially hampered—when repeatedly being requested to complete a particular job, for instance by administration staff (reported in 2 focus groups):

“We get job action requests [from the call centre] over and over. We’ve [lodged] site reports [saying] we are not going to do [the delivery] until [a present issue] is fixed. The customer rings the call centre, the call centre rings us, put[s the job] back on [our] delivery run, and keep[s] asking us to go back: “Why haven’t you done this [job] yet?” So I explained it again and again and again.”

On one occasion, a customer requested extra bottles from a delivery driver due to an upcoming long weekend. The driver was unable to follow the request due to the customer’s lack of outside space to safely store the cylinders and the intention to store further cylinders inside. “About an hour or two later, I get a call from [administration] who wanted me to go back [to the customer] and drop off the extra bottles. I said, “I can’t,” and [the admin person] goes, “The customer needs them.” I said, “I’m sorry but [the customer] can’t [store cylinders] inside and outside. So I’m not giving them to him. Sorry, No.” So that’s where I left it. [But] I had to tell [the admin person] about four times before she realised that I was starting to get angry re-explaining myself.”

3.2.3. Technical/physical aspects

Stopping is hampered when financial reimbursement is dependent on the successful completion of the job (reported in 2 focus groups). Participants explained that certain subcontractors who work for companies other than the energy supplier get paid per gas cylinder delivered to customers:

“They buy the gas, put their quota on top, [and] deliver [the gas] regardless. They’ve got to make money on that gas. It’s open slather. They do what[ever jobs] they have left to do. So it doesn’t matter if [the subcontractor] gets [to a customer site] and it’s unsafe. All [that the subcontractor]’s concerned is, “I’m going to get paid for those bottles. So I’m going to swap them over.””

3.2.4. Nontechnical/personal aspects

Training, experience, and seniority support stopping (reported in 6 focus groups). Participants explained:

“To be able to make [a stop work] decision I had to be trained. If you don’t have the knowledge, you don’t even see a danger. If I see a risk and I want to stop it, a lot has to do with experience.”

Workers were less inclined to discontinue a task at the early stage of their careers:

“When I started here young and wanting to impress, you’d do all your jobs. But now that a bloke is older, you think, “I can’t do that [task].””

Senior workers are more likely to stop for safety, for instance when having to make the decision not to drive through tunnels with gas delivery trucks despite potential consequences:

“It’s mainly new drivers [who drive through tunnels] because they don’t know all the back ways to bypass the tunnels. Before they know, the tunnel’s there and they [think], “I’ll just go through.” [Yet] it wouldn’t be hard [to stop]: you just pull over or take the next exit off [the highway]. But if you got to the point where the tunnel’s there and you’ve got nowhere to go: stop, ring up, [and explain], “I’m at the tunnel but I’m not going through. Can you ring the police [or] somebody [to] give me an escort back out?””

Stopping is hampered by uncertainty (reported in 3 focus groups). Participants spoke of a time when they continued work for a while to see how a situation would unfold. Workers were conducting work at the gas terminal at night when they noticed a fire in a nearby factory:

“We didn’t stop work straight away. We looked at it [and decided], “Okay, no worries.” Just kept going for another five minutes [or] less. We actually heard an explosion, aerosol can[s] went off. I was talking to the neighbours. They [had] called the fire brigade already. While I was there, [the fire] was getting bigger. The embers [were] coming actually into the yard. That’s when we just stopped. We shut everything down, got everyone out. Back then we fill[ed with] valves open, which we were allowed to do back then. So there was gas coming out [of the cylinders]. The [terminal] could have blown up. It just wasn’t safe to continue working. [So] we stopped and turned everything off.”

Uncertainty is exacerbated when instructions are ambiguous. Participants spoke of contradictory instructions regarding stopping versus continuing when compliance plates are missing at customer sites:

“We’ve been told that if a site doesn’t have a compliance plate, you don’t deliver. We’re getting a lot of [sites] without compliance plates, way out in the middle of nowhere. We get out there for one cylinder and it’s taken us [up to] three hours from here to do that first delivery—for nothing. [Customers] go off, “Why can’t you deliver?” And yet, [in] our last safety meeting we were told, “If [the customer site] is only missing the compliance plate, you can do the delivery and we’ll send a fitter out.” The right hand doesn’t know what the left hand is doing. It’s

contradiction.”

Stopping is hampered by fatigue (reported in 2 focus groups). Workers reflected, *“You’d probably like to apply [the ASW] the same as early in the morning, but maybe your awareness is not quite there [to trigger stopping]. You definitely want to be as sharp but you just can’t because you’re getting a bit tired.”*

Stopping is hampered by complacency and an attitude of ‘she’ll be right’ (reported in 3 focus groups). A vehicle maintenance fitter spoke of a driver who took out a faulty truck:

“I’ve had a driver drive [the] truck all day and then [say to me], “When I got in the truck this morning, I noticed an air leak and [a] high pressure differential gauge wasn’t working properly.” These are issues [the driver] should not have taken the vehicle out. I think [regarding] half of [the drivers], it’s just complacency: “She’ll be right, mate. It won’t happen to me.””

Stopping is also hampered by productivity (reported in 4 focus groups). Workers outlined the need to be productive:

“If [workers] take [all of] their breaks, they don’t get the work done. [But] you’ve got to do [the work], that’s the job. You’ve got to supply your customers. I’m sure I shouldn’t drive as fast and hit the brakes as much as I do, but [we are instructed to] get back to [the terminal, e.g.] by 12:30[pm]: “We’ve got a meeting.” 30 jobs—crikey! Sometimes people probably think, “In a perfect world I’d stop [that task], but you’ve got to get the delivery done.” We’ve got the ASW. We can stop work—there’s no drama. But then nothing gets done. So you end up going back to the way you were doing [the work].”

3.3. Ways of stopping

When a productive task is stopped, the need for the task does not disappear. The act of stopping is in fact a choice from several options that have different consequences: rectify (3.3.1), delay (3.3.2), consult/transfer (3.3.3), and abandon (3.3.4).

3.3.1. Rectify

Work activities are sometimes stopped to actively rectify issues before work can be continued. The workers who stop are sometimes engaged in solving the problem. For instance, when it comes to their attention, workers stop others from driving vehicles with unsecured loads to get the issue rectified. A terminal operator spoke of a time when a cylinder truck arrived at the terminal to drop off material:

“When the truck rolled in here, I actually nearly threw up. [The driver] drove all the way from [name of town] with one strap around about 8 ton [of load]. I said, “No man. We’ve got to sort this out. The way you’ve come up is incorrect. We’re stopping work. We’re going to unload you. I’ll give you straps [to] make this vehicle safe.””

Workers also stop the use of defective vehicles to have them rectified. For example, a maintenance worker grounded a contractor vehicle for several problems:

“[The truck] was full of cylinders. So I informed the driver to unload and park it. The driver was thankful [but] the owner of the truck, the principal contractor, basically tore me a new...: “You have no right to pull my vehicle off the road.” About a fortnight later, the vehicle come back all nice and shiny. But it caused me no end of grief.”

A leading hand spoke of another situation when a driver did not report an issue with a delivery truck:

“[The] driver didn’t inform me that he had to physically lift the tailgate to close it because the torsion bar was broken. He’s been [physically handling the tailgate] for three, four days. I said to him, “You can’t do that. That is unsafe. You need to change trucks. You should have reported this three days ago, not now.””

3.3.2. Delay

Work is sometimes delayed until a condition is met for work to continue safely. Workers spoke of a time when work was postponed to a more suitable time:

“A gas leak [was] reported at night. We’ve shut that piece of [gas connection] off. It’s easier to work on it during the day. We tell [customers], ‘We’re going to shut the [gas] off and we’ll be back tomorrow morning to [fix the problem]. You’ll have to go the night without gas. It’s unsafe to work on it at night.’”

On other occasions, work is delayed due to interruptions by colleagues, workers of other companies, or members of the general public. Workers outlined a situation when they were refilling a series of 210 kg cylinders in a public car park. A gardener of another company was working about 50 meters away:

“I thought he’s miles away. I kept watching where he was. All of a sudden he came around with an edge cutter, sparks flying off. I’ve had to shut the truck down, stop. We had to take the hose off and wind back into the truck because I didn’t know where he was going. There was another edging near beside the truck so I wanted to get the hose out of the way. I went over [and said], ‘We’re doing a gas delivery. Those sparks could ignite [the gas]. We’ll be here another five minutes maximum.’ [The gardener responded,] ‘I’ve got a job to do too,’ and kept going. So we had to wait for him to finish cutting before we could continue. I was worried where he was going through.”

3.3.3. Consult/transfer

Work is sometimes stopped to consult with someone else before a decision is made about whether or not to continue. This sometimes has the effect of transferring responsibility for the decision, or even for completion of the task. Workers, for example, stop to consult with their superiors when they are unsure about how to solve a problem. On one occasion, a worker called his terminal manager for help to fix a customer’s hot water system:

“‘I’ve got no experience how to light this hot water system. I can’t do it. I haven’t been trained in how to do it either. But we’re talking about an old lady [who] is on a walking stick [and] lives by herself.’ Her way of life would have been affected if we didn’t fix the situation. [Subsequently, the terminal manager] stopped what he was doing straightaway and said, ‘Just leave it all turned off and I’ll go over and fix it. I’ve got the experience on how to do it.’”

Workers transfer jobs to colleagues when they are unable to complete the work themselves. For example, a worker requested a contractor to complete a particular task:

“When I stopped work it’s because I can’t park. I’ve got an oversized truck for the area I’m delivering in and there’s no parking bays for trucks of my size, only utes and two-ton trucks. My truck is eight meters long and I’m delivering in town. There’s a lot of places that you can’t park legally, otherwise you double park. So I don’t do [the delivery]. I get a contractor to do it with a ute. Once I highlight [the problem to the company], I don’t go there again.”

3.3.4. Abandon

Workers sometimes stop without any intention to return and continue with a task at a later stage. Workers firmly stop, walk away, or refuse to continue. For instance, workers sometimes abandon a job to prevent customers from using a defective installation:

“The problem you’ll have once you’ve stopped the job [and] no one’s at that premises, where do you go from there? What is stopping [customers] from grabbing a bottle [and] hooking up to [the system]? Not doing the

delivery is not going to solve an issue with why you’ve stopped work. I’ve got to one stage where the [customer’s] place was that bad, I actually ripped the regulator off so [the customer] couldn’t do anything. I had no way of contacting them. I left a note, ‘Do not hook up to this install. You need to have it repaired.’ The message got through. It may be a bit extreme, but it got through.”

Workers abandon certain tasks to comply with company rules. Participants, for instance, spoke about a customer site that had three units and their backyards in a line. The backyards were segregated by a six-foot fence and no gates:

“The only way to get out the back [of the unit] was to go through the front door [and] wheel [the gas cylinders] through the lounge [and] kitchen. The customer said, ‘Yes, that’s fine. You can do it,’ [but] we said, ‘No way we can deliver. One, it’s illegal [to wheel cylinders through premises]; and two, we [might] chip a tile or the trolley leaves marks on your carpet.’”

4. Discussion

This study sheds light on the factors that trigger consideration of stopping, support and hamper workers in deciding to stop, and ways of stopping. Understanding these factors is necessary but not sufficient for increasing the likelihood of stopping work for safety, and in particular in designing an effective ASW system.

ASW is often framed as an individual choice, reflecting a behavioural approach to safety. ‘Behavioural safety’ focuses on human performance, such as influencing people’s attitudes and actions (Cox and Jones, 2006; Geller, 2000, 2004; Johnson, 2003; Shin et al., 2014; Sulzer-Azaroff and Lischeid, 1999). This might inspire company leaders to print and put up an even larger number of ASW posters everywhere in the organization. Workers might be asked to acknowledge with their signature that they have read and understood the company’s ASW policy and their obligation to stop for safety. Yet research has challenged the effectiveness of interventions that mainly seek to target human behaviour (Dekker, 2003, 2014; Eckenfelder, 2004; Lay et al., 2015; Pitzer, 2015). The findings in this paper support these concerns. Workers were found to be highly willing and likely to stop when they deem work unsafe (3.2). Yet factors that prevent stopping are primarily social rather than personal. Hence, intervention at the personal, behavioural level will not address the actual difficulties in stopping unsafe work.

An ASW is a well-intended safety initiative from management. Yet the present findings support concerns expressed in the literature that ASW policy alone is insufficient to increase the likelihood of people stopping (Logsdon, 2013). Discontinuing work does not seem to solely hinge on the willingness of individual workers. Successfully stopping an unsafe task is also dependent on situational and contextual factors surrounding those who have to make the decision to stop—as mirrored in the numerous and diverse themes reported by the participants. Stopping can be challenging, for instance when workers are unsure if they are authorised to stop, expected to meet production goals, or when they have experienced—or heard of—negative consequences when stopping (Cook et al., 2007; Logsdon, 2014; Shemwell, 2013; Shirali et al., 2012; Vaughan, 2004). Therefore, organizational leaders need to support the workforce not having to stop work in the first place (Efendi, 2016). ASW should be seen as the last line of defense, similar to wearing protective clothing. Rather than relying on ASW policy and regarding the stopping of an unsafe task as a simple, unambiguous, binary decision—stop versus not stop—to be made by those working at the sharp operational end, organisational leaders need to increasingly focus on, understand, and provide the environment and conditions that enable their workforce to stop. Work—and the stopping and continuing thereof—takes place in the context of the work environment. Workers’ decisions and actions are a function of this context. Company leaders

Table 3
Suggestions to organisational leaders on promoting ASW policy.

<p>Social:</p> <ul style="list-style-type: none"> ● Promote and support teamwork; help your workers get to know each other, for them to be able to approach and challenge one another ● Enquire if everyone feels to be part of a team and able to ask for help or a second opinion when in doubt ● Support your workers to help each other rather than putting pressure on peers ● Support and improve the knowledge base and communication across people in different roles ● Offer unequivocal support and certainty about the absence of negative consequences to stopping, even if a stop work decision turns out to have been unnecessary; ensure direct management to be approachable and supportive ● Provide your workers with stop work examples and experiences by those who have stopped ● Explore and consider your people's different views of safety, risk, danger, and the tasks that can be continued versus have to be stopped ● Help your workers deal with challenging social interactions, such as collaborating with customers. Increase your customers' knowledge and understanding of the product and the associated risks <p>Technical/physical:</p> <ul style="list-style-type: none"> ● Support your workers to deal with and solve the physical and technical challenges they experience ● Provide your workers with the necessary tools and equipment to successfully perform their tasks ● Equip vehicles according to workers' needs, for them to be able to deal with challenging conditions at work (e.g. customize in-truck air conditioning to reduce and avoid heat-related stress) 	<p>Procedural:</p> <ul style="list-style-type: none"> ● Understand work-as-done and the challenges of everyday work ● Identify and resolve conflicting goals and gaps between planned and executed work ● Develop practicable solutions by consulting with those who perform the safety-critical work ● Get feedback from your workforce about whether implemented solutions actually work ● Examine and assess the potential consequences of new, or changes to existing procedures ● Ensure that reported issues get rectified as soon as possible for your workers to be able to complete their tasks ● Check and continuously improve scheduling ● Consider a flexible approach to performing work. Allow your workers to adapt shifts, e.g. to the weather conditions <p>Non-technical/personal:</p> <ul style="list-style-type: none"> ● Encourage and guide conversations across your workforce to support learning and share experiences, such as dealing with uncertainty ● Provide your workers with job security ● Offer the necessary training, particularly to your less experienced workers ● Trust your workforce rather than requesting the justification of stop work decisions ● Help your workers deal with fatigue; offer a flexible approach to managing fatigue ● Manage production pressure: keep the number of deliveries per driver doable, particularly in times of high demand; adapt your production goals and the number of your staff to balance people's workload ● Explore your workers' reasons to continue when you think work should have stopped
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thus have to create a stop-work environment in which workers feel fully encouraged and empowered to discontinue safety-critical tasks when necessary.

It is of course a starting point to promote the factors that support and tackle those that hamper stopping, while helping the workforce deal with experienced challenges at work. Suggestions of how management can help build a stop-work environment are outlined in Table 3. The suggestions are derived directly from our findings and largely directed towards company leadership rather than a workforce because only the former is believed to have the administrative power to initiate the necessary changes. The findings of our study show goal conflicts (i.e. workers have to balance stopping for safety and productivity [3.2.4]) and differences between the views of the management and workforce regarding stopping (Hollnagel and Fujita, 2013; Shirali et al., 2012; Woltjer et al., 2015). Examples of the latter pertain to postponing deliveries (3.2.2), complying with compliance plates (3.2.4), or handling dogs (3.2.2), respectively:

- Whereas management imagines workers to postpone unfinished deliveries to the following day, workers are reluctant to stop due to work piling up;
- Whereas management expects workers to stop a delivery when a compliance plate is missing, workers are reluctant to stop when they have driven several hours to get to the customer site;
- Whereas management generally prohibits workers from entering sites with unrestrained dogs, workers are reluctant to stop when a dog is a friendly Pomeranian.

Hence, management is advised to particularly focus on differences in the way stopping is imagined and executed, and to help create solutions to conflicting goals in everyday operation (Hollnagel, 2009). Goal conflicts—such as stopping for safety versus continuing for productivity—have to be identified and resolved to avoid practical drift to unsuccessful work practices (Dekker, 2011; Hollnagel, 2014).

This study has explored the views and opinions of a workforce regarding the stopping of work for safety. The people involved represent an experienced group of workers who perform various safety-critical roles and tasks within one of Australia's largest energy providers. The conversations were analysed in-depth. The project has revealed diverse aspects and multi-layered facets of stopping. The findings add to the

understanding of what one of our reviewers called “a very important and under-researched topic.” Indeed, the academic literature on research into ASW is limited. We hope this research will encourage further studies and stimulate the discussion about ASW policy both in industry and academia.

There are some issues raised by the participants that could not be resolved within the scope of the study. These include:

- The management perspective is inferred from the reflections of the workers about management, and the comments of the terminal managers involved.
- It remains unanswered whether an ASW is more effective when it is signed by direct rather than senior management. The findings suggest tentatively that immediate supervisor support may be more important than executive management support.
- The benefits of adjusting the wording in an ASW, e.g. from “stopping” to “pausing” tasks in order to imply a short interruption of work with the intent to continue as soon as possible (Logsdon, 2014).
- Whether championing safety as a “first priority” is helpful in stopping work. The findings suggest tentatively that workers already hold a more nuanced view of productivity/safety trade-offs.
- How ASW interacts with other safety initiatives such as ‘Lifesaving Rules’ or ‘Safety Essentials.’ The findings show that rules can be helpful in stopping, but not all rules are helpful all of the time.
- Whether contractors experience different factors in stopping work. The findings suggest that employment security is a factor, but almost all participants were permanent employees.

This research has identified opportunities for follow-up studies. Further research is required to explore:

- if an ASW is more effective when signed by direct management, such as terminal or line management.
- whether contractors face different challenges when stopping a task and if difficulties regarding stopping are exacerbated for contractors, e.g. in case they only get reimbursed upon completion of a delivery.
- the opinions of middle and senior management regarding ASW policy, and to contrast those insights against the present findings.

- the benefits of adapting the wording in an ASW policy, e.g. “pausing” a task for safety.
- if promoting safety as a “first priority” is helpful in stopping work.
- how ASW policy relates to other safety initiatives.
- how ASW applies to different tasks, roles, companies and industries.

Some of the workers involved in the Eagle Farm Racecourse re-development decided to stop, whereas others continued (Blucher, 2016; Branco, 2016; Kos, 2016). This raises the question about the presence of an environment in which discontinuing was possible and encouraged without workers having to resign from their jobs. Workers may have experienced difficulties that prevented them from stopping, similar to the challenges identified in the present research. We hope that the inquiry into the accident will provide some insight into the work context that surrounded those involved. The creation of an environment that allows stopping, however, must not only take place in the form of a reactive accident investigation in hindsight, but also within the scope of a proactive safety exploration in foresight.

5. Summary and conclusions

The purpose of this article has been to better understand the use of ASW policy in daily operation and to identify factors that support and hinder a workforce to effectively discontinue work to maintain safe operation. Focus group conversations with an experienced workforce in the oil and gas industry have revealed workers’ willingness to stop work for safety and the appreciation of being provided with an ASW. Yet the findings have also pointed out the relevance of the context in which stopping does, or is supposed to, take place. A stop work decision is influenced by, and depended on, various real or perceived contextual factors, pertaining to procedural, social, technical/physical, and non-technical/personal aspects.

The insights of this study lead to the conclusion that an ASW policy is a behavioural and limited approach to increase the likelihood of people stopping. An ASW policy is behavioural because it entirely relies on the decisions and actions of those who conduct the work at the sharp operational end; it is limited because it leaves contextual factors unconsidered. An ASW policy is therefore only a starting rather than an ending point. To encourage, promote and alleviate stopping, a Stop Work *Authority* has to be embedded in, and supported by, a stop work *environment* that provides the necessary conditions for people to discontinue work. Yet this can only be achieved when company leadership strongly collaborates with its workforce to identify the idiosyncrasies, and help resolve the challenges, of everyday work.

Acknowledgements

This research has been kindly supported by the participating energy supplier. The views expressed here are solely those of the authors. Management of the supplier has initiated—and already successfully completed—actions for operational improvement based on, and prior to the completion of, this research. We thank the participating company, the LPG business, and the participants for their time and support. We also thank our reviewers for the constructive feedback.

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